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WEEKLY SOUTHERN INDUSTRIAL  
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## In This Issue:

Review of the year's  
developments in  
Southern Coal Fields  
by  
Mr. F. E. Saward.

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VOL. XL.  
No. 23.

THE FULL TABLE OF CONTENTS WILL BE FOUND ON PAGE 404.

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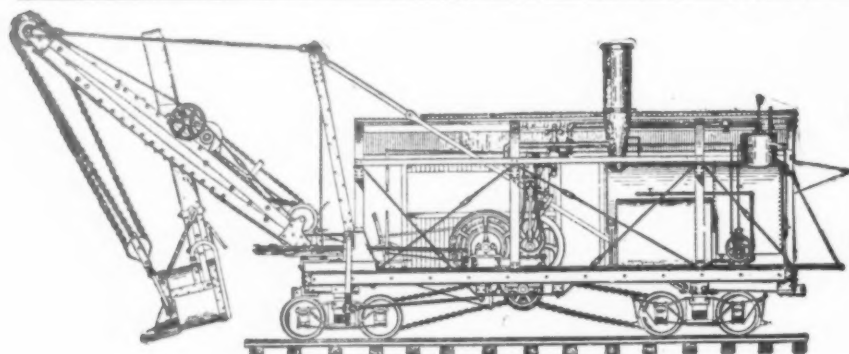
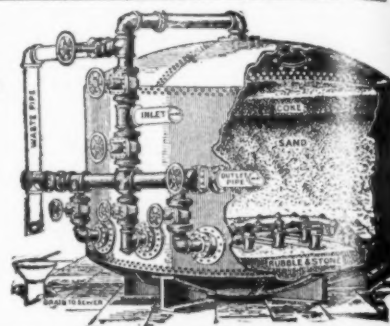
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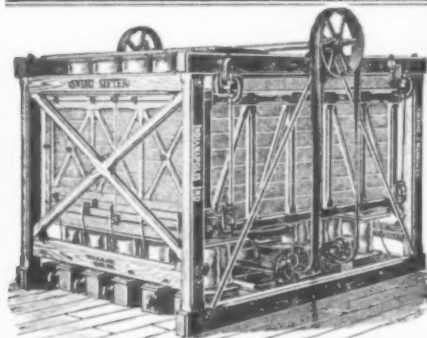
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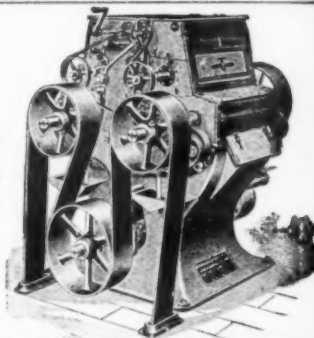
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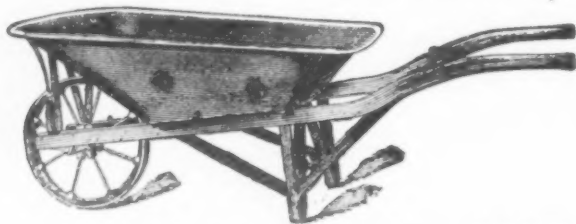
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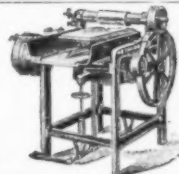


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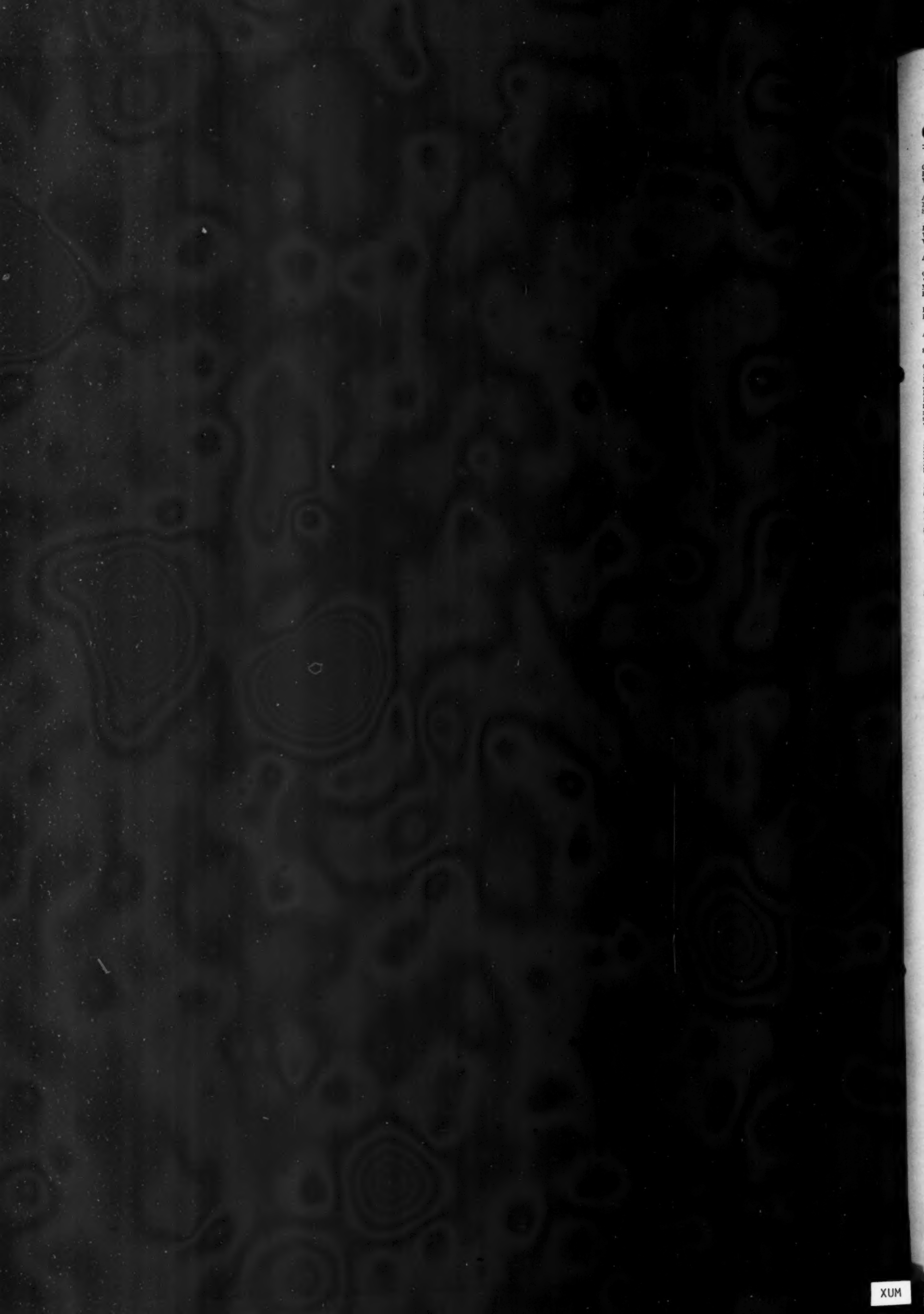
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## Classified Index of Advertisers.

FOR ALPHABETICAL  
INDEX See Page 29

- Acid Chambers.**  
Caroline Iron Works, Baltimore, Md.  
Robertson Mfg. Co., James, Baltimore, Md.  
Valk & Murdoch Iron Wks., Charleston, S. C.
- Accountants.**  
Audit Co. of New York, The New York, N. Y.  
National Promoting & Auditing Co., Boston, Mass.  
Southern Industrial Co., Birmingham, Ala.
- Accumulators.**  
Bushman Press Co., G. H., Thompsonville, Conn.  
Watson-Stillman Co., New York, N. Y.  
Wood, R. D., & Co., Philadelphia, Pa.
- Adding Machines.**  
American Arithmometer Co., St. Louis, Mo.
- Agent. (Manufacturers and Producers.)**  
Coggins & McIlroy, Baltimore, Md.  
Morrison & Kindersater, Richmond, Va.  
National Roofing Supply Co., Wicliell, W. Va.  
Phillips, Edward W., Baltimore, Md.
- Agricultural Implements.**  
Farquhar Co., Ltd., A. B., York, Pa.  
Hench & Dromgold, York, Pa.
- Agricultural Shapes.**  
American Steel Hoop Co., New York, N. Y.
- Air Brakes.**  
Standard Traction Brake Co., New York, N. Y.
- Air Compressors.**  
Clayton Air Compressor Works, New York, N. Y.  
Hardie-Tyner Pdy. & Mch. Co., Birmingham, Ala.  
Ingersoll-Sergeant Drill Co., New York, N. Y.  
Jacobson Mch. Mfg. Co., Warren, Pa.  
McKiernan Drill Co., New York, N. Y.  
Rand Drill Co., New York, N. Y.  
Smith Machine Co., H. B., Smithville, N. J.  
Sutwell-Bierce & Smith-Vaile Co., Dayton, O.  
Sullivan Machinery Co., Chicago, Ill.  
Victor Electric Co., Chicago, Ill.
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Humboldt Metal Works, South Somerville, N. J.  
Merchant & Co., Inc., Philadelphia, Pa.  
Ryan, J. J., & Co., Chicago, Ill.
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Harris, Theo., & Son, St. Louis, Mo.  
Ryan, J. J., & Co., Chicago, Ill.
- Architects.**  
Makepeace, C. R., & Co., Providence, R. I.  
Milburn, Frank P., Columbia, S. C.  
Pray, C. A. M., & Co., Providence, R. I.  
Simpson, A. D., Birmingham, Ala.  
Walter & Legare, Columbia, S. C.  
Wheeler, McMichael & Co., Charlotte, N. C.
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Belmont Iron Works, Philadelphia, Pa.  
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Lombard Iron Works & Supply Co., Augusta, Ga.  
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Schreiber, L., & Sons Co., The Cincinnati, O.  
Virginia Bridge & Iron Co., Roanoke, Va.
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Kensby & Mattison Co., Ambler, Pa.
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Corder, Edward, Spencer, W. Va.  
Hanlon, Thos. F., Washington, D. C.
- Babbitt Metal. (See Anti-Friction Metal.)**
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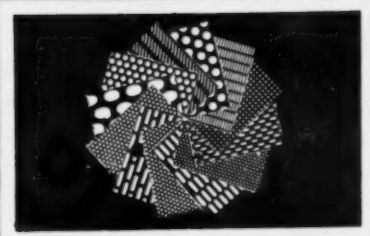
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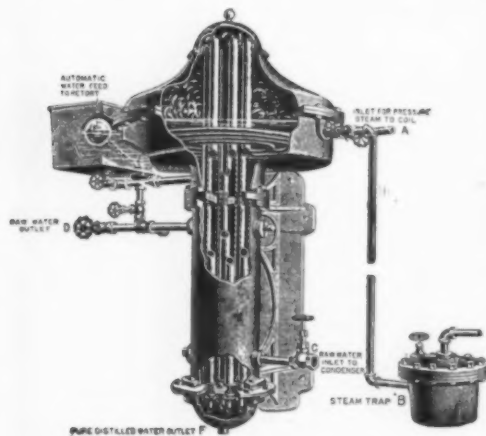
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## Classified Index of Advertisers.

For ALPHABETICAL INDEX See Page 29.

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Manager Southern Department.



## Classified Index of Advertisers.

For ALPHABETICAL  
INDEX See Page 29.**Drop Forgings.**Wilcox Mfg. Co., D., Mechanicsburg, Pa.  
**Dry-Kills.**  
American Blower Co., Detroit, Mich.  
Boston Blower Co., Hyde Park, Mass.  
Sturtevant Co., B. F., Boston, Mass.**Dumbwheels.**

Spidel, J. G., Reading, Pa.

**Drying Machinery.**Aising Co., Inc., J. B., Brooklyn, N. Y.  
American Blower Co., Detroit, Mich.  
Bailey-Lobby Co., The, Charleston, S. C.  
Crown Dryer Co., Cleveland, O.  
Jeffrey Mfg. Co., The, Columbus, O.  
Ruggles-Coles Engineering Co., New York, N. Y.  
Sturtevant Co., B. F., Boston, Mass.  
West Pulverizing Machine Co., New York, N. Y.**Dust-Collecting System.**Allington & Curtis Mfg. Co., Saginaw, E. S. Mic  
Sterling Blower & Pipe Mfg. Co., Hartford, Conn.**Dyeing Machinery.**Fairmount Machine Co., Philadelphia, Pa.  
Klauder-Weldon Co., Amsterdam, N. Y.**Dynamometers and Motors.**Alexander, Jr., Co., S. B., Charlotte, N. C.  
Commercial Electric Co., Indianapolis, Ind.  
Crocker-Wheeler Co., Amper, N. J.  
Electrical Material Co., Baltimore, Md.  
General Electric Co., Schenectady, N. Y.  
Guarantee Electric Co., Chicago, Ill.  
Kentucky Electrical Co., Owensboro, Ky.  
New Jersey Foundry & Machine Co., Plainfield, N. J.  
Northern Electric Mfg. Co., Madison, Wis.  
Ridgway Dynamo & Engine Co., Ridgway, Pa.  
Smith, Samuel J., & Co., Charlotte, N. C.  
Sprague Electric Co., New York, N. Y.  
Stanley Electric Mfg. Co., Pittsfield, Mass.  
Tower-Binford Elec. & Mfg. Co., Richmond, Va.  
Triumph Electric Co., Cincinnati, O.  
Victor Electric Co., Chicago, Ill.  
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.**Electric Contractors.**Alexander, Jr., Co., S. B., Charlotte, N. C.  
Electric Supply Co., Savannah, Ga.  
Jenks, W. H., Richmond, Va.  
Northern Elec. Mfg. Co., Madison, Wis.  
Stanley Elec. Mfg. Co., Pittsfield, Mass.  
Tower-Binford Elec. & Mfg. Co., Richmond, Va.  
Upton, W. P., Co., Washington, D. C.**Electrical Instrument.**Electrical Material Co., Baltimore, Md.  
Northern Electric Supply Co., Madison, Wis.  
Stanley Electric Mfg. Co., Pittsfield, Mass.**Electric Light and Power Plants.**Alexander, Jr., Co., S. B., Charlotte, N. C.  
Commercial Electric Co., Indianapolis, Ind.  
Crocker-Wheeler Co., Amper, N. J.  
Electrical Material Co., Baltimore, Md.  
General Electric Co., Schenectady, N. Y.  
General Incandescent Arc Light Co., New York, N. Y.  
H. J. Foundry & Machine Co., Plainfield, N. J.  
Northern Electric Mfg. Co., Madison, Wis.  
Ridgway Dynamo & Engine Co., Ridgway, Pa.  
Smith, Samuel J., & Co., Charlotte, N. C.  
Sprague Electric Co., New York, N. Y.  
Stanley Electric Mfg. Co., Pittsfield, Mass.  
Triumph Electric Co., Cincinnati, O.  
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.  
Western Electric Supply Co., St. Louis, Mo.**Electric Railway Equipment.**Alexander, Jr., Co., S. B., Charlotte, N. C.  
Electrical Material Co., Baltimore, Md.  
General Electric Co., Schenectady, N. Y.  
Northern Electric Mfg. Co., Madison, Wis.  
Sprague Electric Co., New York, N. Y.  
Stanley Electric Mfg. Co., Pittsfield, Mass.  
Triumph Electric Co., Cincinnati, O.  
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.  
Western Electric Supply Co., St. Louis, Mo.**Electrical Repairs.**Alexander, Jr., Co., S. B., Charlotte, N. C.  
Electric Supply Co., Savannah, Ga.  
General Incandescent Arc Light Co., New York, N. Y.  
Guarantee Electric Co., Chicago, Ill.  
Kentucky Electrical Co., Owensboro, Ky.  
Smith, Samuel J., & Co., Charlotte, N. C.  
Tower-Binford Elec. & Mfg. Co., Richmond, Va.**Electrical Supplies.**Alexander, Jr., Co., S. B., Charlotte, N. C.  
Electrical Material Co., Baltimore, Md.  
Electric Supply Co., Savannah, Ga.  
General Electric Co., Schenectady, N. Y.  
Guarantee Electric Co., Chicago, Ill.  
Jenks, W. H., Richmond, Va.  
Johns Mfg. Co., H. W., New York, N. Y.  
Kentucky Electrical Co., Owensboro, Ky.  
Northern Electric Mfg. Co., Madison, Wis.  
Smith, Samuel J., & Co., Charlotte, N. C.  
Stanley Electric Mfg. Co., Pittsfield, Mass.  
Sturtevant Co., B. F., Boston, Mass.  
Tower-Binford Elec. & Mfg. Co., Richmond, Va.  
Triumph Electric Co., Cincinnati, O.  
Western Electric Supply Co., St. Louis, Mo.  
Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.**Electric Locomotives.** (See Locomotives.)**Electric Trucks.**

Baldwin Locomotive Works, Philadelphia, Pa.

**Electrotypers.**American Type Founders Co., Baltimore, Md.  
Spencer & Hall, Baltimore, Md.**Elevators.**Albro-Clem Elevator Co., Philadelphia, Pa.  
Aultman Co., The, Canton, O.  
Bartlett, Hayward & Co., Baltimore, Md.  
Bates, James, Sons, Baltimore, Md.  
Curran, Jas. H., Elevator Co., Cincinnati, O.  
Fairmount Machine Co., Philadelphia, Pa.  
Fount Le Roy & Co., Baltimore, Md.  
Link-Bell Engineering Co., Philadelphia, Pa.  
Maryland Foundry & Machine Co., Baltimore, Md.  
Morse, Williams & Co., Philadelphia, Pa.  
Parkhurst Bros. & Co., Indianapolis, Ind.  
Park Mfg. Co., Charlotte, N. C.  
Spidel, J. G., Reading, Pa.  
Union Elevator & Machine Co., Chicago, Ill.  
Westbrooks, J. B., Fdry. & Mch. Co., Danville, Va.**Elevator Buckets.**Gould, H. W., & Son Co., Chicago, Ill.  
Greenwald Co., I. & E., Cincinnati, O.  
Jeffrey Mfg. Co., Columbus, O.  
Link-Bell Engineering Co., Philadelphia, Pa.  
Tate, Jones & Co., Pittsburgh, Pa.**Elevator Enclosures and Cabs.**Balderton, H., & Son, Baltimore, Md.  
Bolles, J. E., Iron & Wire Works, Detroit, Mich.  
New Wire Work Co., Louisville, Ky.  
Dufur & Co., Baltimore, Md.  
Ingalls, Wm., Wire & Iron Works, Detroit, Mich.  
Ludlow-Saylor Wire Co., The, St. Louis, Mo.  
Myers Mfg. Co., The Fred J., Hamilton, O.**Elevator Ropes.** (See Wire Ropes.)**Emery.**Corborandum Co., The, Niagara Falls, N. Y.  
Scranton Corundum & Emery Wheel Co., Scranton, Pa.  
Tait Co., The, Stroudsburg, Pa.**Emery Wheels.** (See Grinding and Polishing Machinery.)**Engineers.** (Electric, Consulting, Contracting Mechanical and Mining.)Alber & Byrnes, Birmingham, Ala.  
Adams, Henry, Baltimore, Md.  
American Bridge Co., New York, N. Y.  
Blanton, Jr., E. A., Philadelphia, Pa.  
Collier & Brown, Atlanta, Ga.  
Erikson, Edw. E., Pittsburgh, Pa.  
Given, Wm. M., Birmingham, Ala.Hall, Charles A. M. E., Mobile, Ala.  
Hutton Engineering Co., Lexington, Va.  
Kennedy, Walter, Pittsburgh, Pa.  
Lederle, Frank, Atlanta, Ga.  
Marrow, W. Drummond, Charlotte, N. C.  
Morrison & Kindersater, Richmond, Va.  
Nicol, T. W., Mobile, Ala.  
Northern Elec. Mfg. Co., Madison, Wis.  
Perry, Nathaniel V., Atlanta, Ga.  
Pratt & Boltwood, Chapel Hill, N. C.  
Pratt Laboratory, N. P., Atlanta, Ga.  
Railways & Light Co. of America, Balto, Md.  
Reid, Thorburn, New York, N. Y.  
Ridson-Alcott Turbine Co., Mount Holly, N. J.  
Robinson Contracting Co., Geo. A., Mobile, Ala.  
Smith & Co., F. L., New York, N. Y.  
Stanley Elec. Mfg. Co., Pittsfield, Mass.  
Tower-Binford Elec. & Mfg. Co., Richmond, Va.  
Upton, W. P., Co., Washington, D. C.  
Virginia Bridge & Iron Co., Roanoke, Va.  
Witherow, Jas. P., Pittsburgh, Pa.**Engines.**Alexander, Jr., Co., S. B., Charlotte, N. C.  
American Blower Co., Detroit, Mich.  
Atlas Engine Works, Indianapolis, Ind.  
Ball Engine Co., The, Erie, Pa.  
Ball & Wood Co., New York, N. Y.  
Boston Blower Co., Hyde Park, Mass.  
Brownell & Co., The, Dayton, O.  
Buffalo Forge Co., Buffalo, N. Y.  
Cameron & Barkley Co., Charleston, S. C.  
Chicago House Wrecking Co., Chicago, Ill.  
Erie Pump & Engine Co., Erie, Pa.  
Frick Co., Wayneboro, Pa.  
Gibbs, W. H., & Co., Columbia, S. C.  
Greenwald Co., I. & E., Cincinnati, O.  
Hardie-Tynes Fdy. & Mch. Co., Birmingham, Ala.  
Harrisburg Fdry. & Mch. Works, Harrisburg, Pa.  
High Point Machine Works, High Point, N. C.  
Hill, Wm. E., & Co., Kalamazoo, Mich.  
International Power Co., Providence, R. I.  
Leffel, James, & Co., Springfield, O.  
Lidgerwood Mfg. Co., New York, N. Y.  
Lombard Iron Works & Supply Co., Atlanta, Ga.  
McLave, Hamilton & Rimmer, New York, N. Y.  
McIntosh, Seymour & Co., New York, N. Y.  
Murray Iron Works Co., Burlington, Iowa.  
Necklenburg Iron Works, Charlotte, N. C.  
Minnigerode, Wm., Lynchburg, Va.  
Newport News Shipb'g & Dry Dock Co., N. News, Va.  
Phillips, Edward W., Baltimore, Md.  
Phoenix Iron Works Co., Meadville, Pa.  
Remington Machine Co., Wilmington, Del.  
Ridgway Dynamo & Engine Co., Ridgway, Pa.  
Salem Iron Works, Winston-Salem, N. C.  
Schonfeld, J. S., Sons Co., Macon, Ga.  
Smith-Courney Co., Richmond, Va.  
Southern Eng. & Boiler Works, Jackson, Tenn.  
Southwark Foundry & Machine Co., Philadelphia, Pa.  
St. Louis Iron & Machine Works, St. Louis, Mo.  
Struthers, Wells & Co., Warren, Pa.  
Sturtevant Co., B. F., Boston, Mass.  
Union Iron Works Co., Selma, Ala.  
Valk & Murdoch Iron Works, Charleston, S. C.  
Valley Iron Works, Williamsport, Pa.  
Vilter Mfg. Co., Milwaukee, Wis.  
Wetherill, Robert, & Co., Chester, Pa.  
Westinghouse Machine Co., Pittsburgh, Pa.  
York Mfg. Co., York, Pa.**Engines.**Blakelee Mfg. Co., The, Birmingham, Ala.  
Columbus Machine Co., Columbus, O.  
Fairbanks Co., Baltimore, Md.  
Olds Motor Works, Detroit, Mich.  
Otto Gas Engine Works, Philadelphia, Pa.  
Struthers, Wells & Co., Warren, Pa.  
Westinghouse Machine Co., Pittsburgh, Pa.**Engines.** (Gas and Kerosene.)

Mies, A., New York, N. Y.

**Engines.** (Oil.)

Aultman Co., The, Canton, O.

**Engravers.**Acme Photo-Engraving Co., Baltimore, Md.  
Alpha-Photo Engraving Co., Baltimore, Md.  
Baltimore Engraving Co., Baltimore, Md.  
Middleton, J. W., Chicago, Ill.**Exhaust Heads.**Bonar James & Co., Pittsburgh, Pa.  
Burt Mfg. Co., Akron, O.  
Sterling Blower & Pipe Mfg. Co., Hartford, Conn.**Expansion Bolts.**

New Jersey Foundry &amp; Machine Co., Plainfield, N. J.

**Fans.** (Electric.)

Electrical Material Co., Baltimore, Md.

**Fans.** (Ventilating.) (See Blowers, Exhaust Fans.)**Feed-Water Heaters and Purifiers.**Berrymann, Jas., Philadelphia, Pa.  
Bonar James & Co., Pittsburgh, Pa.  
Gem City Boiler Co., Dayton, O.  
Green Fuel Economiser Co., Mattawau, N. Y.  
Greenwald Co., I. & E., Cincinnati, O.  
Harrison Safety Boiler Works, Philadelphia, Pa.  
Kelley, Benj. F., & Son, New York, N. Y.  
National Pipe Bending Co., New Haven, Conn.  
Park Mfg. Co., Charlotte, N. C.  
Patterson, Frank L., New York, N. Y.  
Phillips, E. W., Baltimore, Md.  
Phoenix Iron Works Co., Meadville, Pa.  
Scale, Wm. B., & Sons, Pittsburgh, Pa.  
Sulwell-Bierce & Smith-Vaile Co., Dayton, O.  
Taunton Locomotive Mfg. Co., The, Taunton, Mass.  
Warren Webster Co., Camden, N. J.**Felted.** (Hair.)

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Dow Wire Works Co., Louisville, Ky.  
Dufur & Co., Baltimore, Md.  
Eureka Supply Co., Chattanooga, Tenn.  
Ingalls, Wm., Wire & Iron Works, Detroit, Mich.  
Ludlow-Saylor Wire Co., St. Louis, Mo.  
New Jersey Wire Cloth Co., Trenton, N. J.**Fertilizer Machinery.** (See Phosphate Mch.)**Files.**Barnett Co., G. & H., Philadelphia, Pa.  
Besly, Chas. H., & Co., Chicago, Ill.  
Nicholson File Co., Providence, R. I.**Filters.** (Water.)Hammond Iron Works, Warren, Pa.  
Industrial Water Co., New York, N. Y.  
Necot Water Softener Co., Chicago, Ill.  
N. Y. Continental Jewell Filtration Co., New York, N. Y.  
Scaife, Wm. B., & Sons, Pittsburgh, Pa.  
Watson, N. A., Erie, Pa.**Filters.** (Oil.)Bonar James & Co., Pittsburgh, Pa.  
Burt Mfg. Co., The, Akron, O.  
Textile Mill Supply Co., Charlotte, N. C.**Filter Presses.**Johnson, J. & Co., New York, N. Y.  
Stillwell-Bierce & Smith-Vaile Co., Dayton, O.**Fire-Brick.**Carolina Fire-Brick Works, Killian, S. C.  
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## Classified Index of Advertisers.

FOR ALPHABETICAL  
INDEX See Page 29.

## Fire Escapes.

Bolles Iron & Wire Works, J. E., Detroit, Mich.  
Dow Wire Works Co., Louisville, Ky.  
Ingalls, Wm., Wire & Iron Works, Detroit, Mich.

## Flooring. (Polished Hardwood.)

Adams, J. M., Baltimore, Md.  
Wilco Co., The T., Chicago, Ill.

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Aling Co., Inc., J. E., Brooklyn, N. Y.  
Caldwell, H. W., & Son Co., Chicago, Ill.  
Dehner-Wuerpel Mill Bldg. Co., St. Louis, Mo.  
DeLoach Mill Mfg. Co., Atlanta, Ga.  
Nedyke & Marmon Co., Indianapolis, Ind.  
Salem Machine Works, Salem, Va.  
Sprout, Waldron & Co., Muncy, Pa.  
Starr, B. F., & Co., Baltimore, Md.  
Wolf Co., Chambersburg, Pa.

## Forges.

Boston Blower Co., Hyde Park, Mass.  
Buffalo Forge Co., Buffalo, N. Y.  
Hurterant Co., B. F., Boston, Mass.

## Foundry Equipment and Supplies.

Etting, Edw. J., Philadelphia, Pa.  
Hill & Griffith Co., Cincinnati, O.  
Obermayer Co., S., Cincinnati, O.

## Foundry Ladles. (See Foundry Equipment)

## Fuel Economizer.

Broomell, Schmidt & Co., Ltd., York, Pa.  
Green Fuel Economizer Co., Mattawan, N. Y.

## Fuel Oil Equipment and Machinery.

Petroleum Iron Works Co., Washington, Pa.  
Rockwell Engineering Co., New York.  
Tate, Jones & Co., Inc., Pittsburg, Pa.

## Furnace Builders.

Erikson, Edw. E., Pittsburg, Pa.  
Kennedy, Walter, Pittsburg, Pa.  
Means & Fulton Iron Works, Birmingham, Ala.  
Witherow, Jas. F., Pittsburg, Pa.

## Furnace Heating. (Stoves.)

Richmond Stove Co., Norwich, Conn.

## Furnaces. (Metallurgical.)

Rockwell Engineering Co., New York, N. Y.

## Furnaces. (Gas Soldering.)

Jacobson Mfg. Co., Warren, Pa.

## Gages (Recording) and Counters.

American Steam Gauge Co., Boston, Mass.  
Crosby Steam Gauge & Valve Co., Boston, Mass.

## Galvanized Sheets.

American Sheet Steel Co., New York, N. Y.

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Whitton Machine Co., D. E., New London, Conn.

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New Process Rawhide Co., Syracuse, N. Y.

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Fairmount Machine Co., Philadelphia, Pa.

## Greenwald Co., J. &amp; E., Cincinnati, O.

Link-Belt Engineering Co., Philadelphia, Pa.  
Morse, Williams & Co., Philadelphia, Pa.

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Nuttall Co., R. D., Pittsburg, Pa.  
Smith Co., S. Morgan, York, Pa.

## Woods' Sons, T. E., Chambersburg, Pa.

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Cattell, Chas., Staunton, Va.

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McClave, Brooks & Co., Scranton, Pa.

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Burnham Grate Co., Huntsville, Ala.

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Caldwell, H. W., & Son Co., Chicago, Ill.

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Dixon Crucible Co., J. S., Jersey City, N. J.

## Hill &amp; Griffith Co., Cincinnati, O.

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Vitrified Wheel Co., Westfield, Mass.

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## Fay, J. A., &amp; Co., Cincinnati, O.

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Monitor Steam Generator Mfg. Co., Baltimore, Md.

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Hurterant Co., B. F., Boston, Mass.

## Vapor Heating Co., York, Pa.

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## Case Manufacturing Co., The, Columbus, O.

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## Sullivan Machinery Co., Chicago, Ill.

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Singer Automatic Ice Mch. Co., Bridgeport, Conn.

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York Mfg. Co., York, Pa.

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Magid, Louis B., & Co., New York, N. Y.  
National Promoting & Auditing Co., Boston, Mass.

Southern Industrial Co., Birmingham, Ala.

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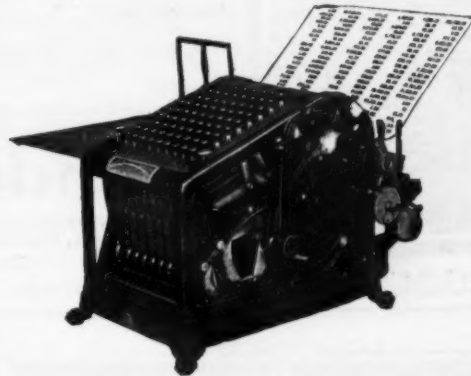
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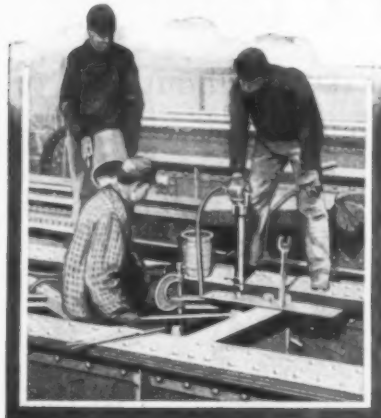
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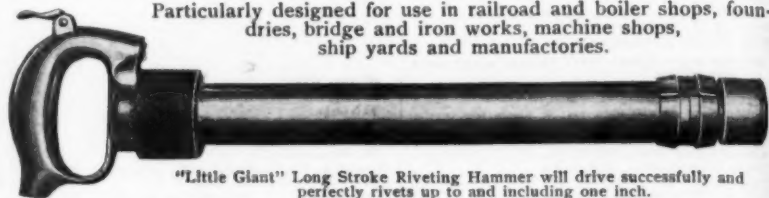


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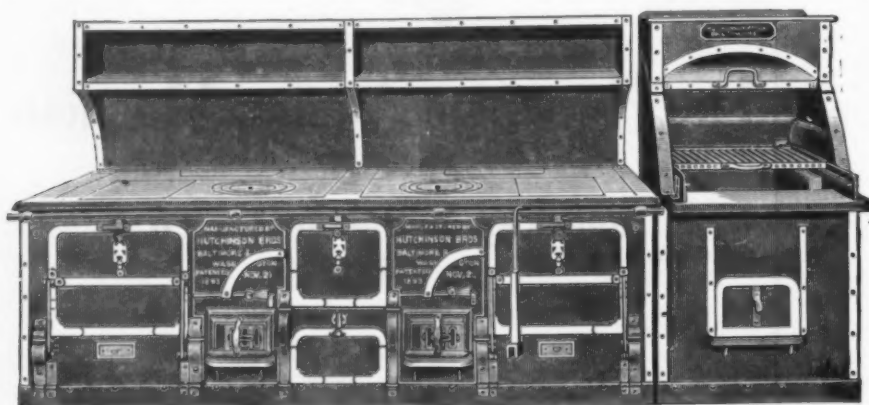
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FOR ALPHABETICAL INDEX See Page 29.

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Drepper Co., Hopedale, Mass.  
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Lehman, Charles T., Birmingham, Ala.

Mallory, J. D., Baltimore, Md.

Mangel Machinery Exchange, Baltimore, Md.

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Pray, C. A. M. &amp; Co., Providence, R. I.

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Baeder, Adamson &amp; Co., Philadelphia, Pa.

**Parquet.**

Adams, J. M., Baltimore, Md.

**Pattern Makers' Machinery.**

Woods, S. A., Machine Co., South Boston, Mass.

**Patterns.** (Metal.)

Ryan, J. J. &amp; Co., Chicago, Ill.

**Paving Materials.**

Charlotte Roofing &amp; Paving Co., Charlotte, N. C.

National Roofing &amp; Supply Co., Louisville, Ky.

Robinson Contracting Co., Geo. A., Mobile, Ala.

Warren-Ehrst Co., Philadelphia, Pa.

**Perforated Metal.**

Aitchison Perforated Metal Co., Robert, Chicago, Ill.

Besly, Chas. H. &amp; Co., Chicago, Ill.

Harrington &amp; King Perforating Co., Chicago, Ill.

Hendrick Mfg. Co., The, Ltd., Carbondale, Pa.

Ludlow-Saylor Wire Co., The, St. Louis, Mo.

Mundt, Charles, &amp; Sons, New York, N. Y.

**Phosphate Machinery.**

Aising Co., J. R., Inc., Brooklyn, N. Y.

Aultman Co., The, Canton, O.

Bailey-Libbey Co., The, Charleston, S. C.

Bradley Pulverizer Co., Boston, Mass.

Cameron &amp; Barkley Co., Charleston, S. C.

Crescon Co., Geo. V., New York, N. Y.

Foss Mfg. Co., Springfield, O.

Link-Belt Engineering Co., Philadelphia, Pa.

McLanahan-Stone Machine Co., Hollidaysburg, Pa.

Raymond Bros. Impact Pulverizer Co., Chicago, Ill.

Simpson Mfg. Co., Chicago, Ill.

Smith &amp; Co., F. L., New York, N. Y.

Valk &amp; Murdoch Iron Works, Charleston, S. C.

Walker &amp; Elliott, Wilmington, Del.

West Pulverizing Machine Co., New York, N. Y.

**Phosphate Screens.** (See Screens.)

Ryan, J. J. &amp; Co., Chicago, Ill.

Phosphor Bronze. (Wire, Rods, Sheets.)

Phosphor Bronze Smelting Co., Ltd., Philadelphia, Pa.

**Pig Iron.**

Alabama Coal &amp; Iron Co., Birmingham, Ala.

**Piling.**

New Orleans Wood Preserving Wks., New Orleans, La.

**Pillow Blocks.**

Crescon Co., Geo. V., New York, N. Y.

Golden's Foundry &amp; Machine Co., Columbus, Ga.

**Pipe.** (Cast Iron and Steel.)

Dimmick Pipe Co., Birmingham, Ala.

General Fire Extinguisher Co., Providence, R. I.

Glamorgan Pipe &amp; Foundry Co., Lynchburg, Va.

U. S. Cast Iron Pipe &amp; Foundry Co., Chattanooga, Tenn.

Wood, R. D. &amp; Co., Philadelphia, Pa.

**Pipe.** (Coll.)

National Pipe Bending Co., New Haven, Conn.

Simmons, John Co., New York, N. Y.

Wolf Co., Fred. W., Chicago, Ill.

**Pipe.** (Cut, Threaded, etc.)

Simmons, John Co., New York, N. Y.

**Pipe.** (Lead.)

Robertson Mfg. Co., James, Baltimore, Md.

**Pipe.** (Straight Riveted.)

Sterling Blower &amp; Pipe Mfg. Co., Hartford, Conn.

**Pipe.** (Spiral Riveted.)

American Spiral Pipe Works, Chicago, Ill.

**Pipe.** (Sewer and Culvert.)

Pomona Terra Cotta Co., Pomona, N. C.

Stevens' Sons Co., H., New York, Ga.

Warner Co., Chas., Wilmington, Del.

**Pipe.** (Wrought Iron.)

Challenge Tube Cleaner Co., Lowell, Mass.

Fairbanks Co., Baltimore, Md.

General Fire Extinguisher Co., Providence, R. I.

**Pipe.** (Unions and Joints.)

Dart Mfg. Co., E. M., Providence, R. I.

**Pipe Cutting and Threading Mach.**

Columbus Machine Co., Columbus, O.

Saunders' Sons, D., Yonkers, N. Y.

**Pipe Fittings.**

General Fire Extinguisher Co., Providence, R. I.

Robertson Mfg. Co., James, Baltimore, Md.

Wolf Co., Fred. W., Chicago, Ill.

**Pipe Wrenches.**

Atlas Pipe Wrench Co., New York, N. Y.

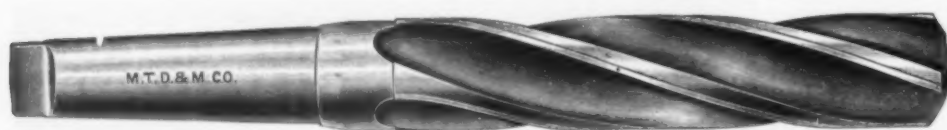
**Planers.**

American Tool Works Co., Cincinnati, O.

**Plantation Locomotives.** (See Locomotive Builders.)**Plaster Ornaments.**

French, Samuel H. &amp; Co., Philadelphia, Pa.





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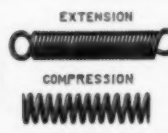
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## Classified Index of Advertisers.

FOR ALPHABETICAL  
INDEX See Page 29.

## Power Transmission Machinery.

Caldwell, H. W., & Son Co., Chicago, Ill.  
Creson Co., Geo. V., New York, N. Y.  
Dehner-Wuepel Mill Building Co., St. Louis, Mo.  
Fairmount Machine Co., Phila., Pa.  
Hunt Co., C. W., New York, N. Y.  
Jacobson Mfg. Co., Warren, Pa.  
Link-Belt Engineering Co., Philadelphia, Pa.  
Northern Electric Mfg. Co., Madison, Wis.  
Stanley Electric Mfg. Co., Pittsfield, Mass.  
Wood's, T. B., Sons, Chambersburg, Pa.

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Boomer & Bochart Press Co., Syracuse, N. Y.  
Bushnell Press Co., G. H., Thompsonville, Conn.  
Cardwell Machine Co., Richmond, Va.  
Valk & Murdoch Iron Works, Charleston, S. C.  
Watson-Stillman Co., New York, N. Y.

**Presses.** (Stamping.)  
Ladler, Chas., & Co., Brooklyn, N. Y.  
Niagara Machine & Tool Works, Buffalo, N. Y.  
**Pulleys.** (Friction Clutch.)  
Blakeslee Mfg. Co., Birmingham, Ala.  
Creson Co., Geo. V., New York, N. Y.  
Fairmount Machine Co., Philadelphia, Pa.  
Jacobson Mfg. Co., Warren, Pa.  
Morgan Smith Co., S. York, Pa.  
Whitman Mfg. Co., New York, N. Y.  
Williams, Milton F., & Co., St. Louis, Mo.  
Wood's, T. B., Sons, Chambersburg, Pa.

**Pulleys.** (Wood Split.)  
Dawson, A. L., & Co., Chicago, Ill.  
Reckbold's Sons, Wm., Philadelphia, Pa.  
Fairbanks Co., Baltimore, Md.  
Ohio Pulley Co., Marion, O.  
Saginaw Mfg. Co., Saginaw, Mich.  
West Virginia Pulley Co., Clarksburg, W. Va.  
**Pulley.** (Pneumatic.)  
Williams, Milton F., & Co., St. Louis, Mo.

**Pulleys, Shafting and Hangers.**  
Caldwell, H. W., & Son Co., Chicago, Ill.  
Creson Co., Geo. V., New York, N. Y.  
Egan Co., The, Cincinnati, O.  
Fairbanks Co., Baltimore, Md.  
Fairmount Machine Co., Philadelphia, Pa.  
Fay, J. A., & Co., Cincinnati, O.  
Finished Steel Co., The, Youngstown, O.  
Golden's Foundry & Machine Co., Columbus, Ga.  
Greswald Co., L. & E., Cincinnati, O.  
Jeffrey Mfg. Co., The, Columbus, O.  
Lane Mfg. Co., Montpelier, Vt.  
Link-Belt Engineering Co., Philadelphia, Pa.  
Lombard Iron Works & Supply Co., Augusta, Ga.  
Maryland Foundry & Machine Co., Baltimore, Md.  
Morgan Smith Co., S. York, Pa.  
Norfolk & Marmore Co., Indianapolis, Ind.  
Rhoads, J. E., & Sons, Wilmington, Del.  
Schofield, J. S., Sons Co., Macon, Ga.  
Stillwell-Bierce & Smith-Valle Co., Dayton, O.  
Textile Mills Supply Co., Charlotte, N. C.  
Valley Iron Works, Williamsport, Pa.  
Wickes Bros., Pittsburg, Pa.  
Wolf Co., Chambersburg, Pa.  
Wood's, T. B., Sons, Chambersburg, Pa.

**Pumps.** (Pneumatic.)  
Bacon Air Lift Co., New York, N. Y.  
Ingersoll-Sergeant Drill Co., New York, N. Y.  
**Pumps.** (Centrifugal.)  
Erie Pump & Engine Co., Erie, Pa.  
Southwarke Foundry & Machine Co., Philadelphia, Pa.  
Wood & Co., R. D., Philadelphia, Pa.  
**Pumps.** (Power Boiler-Feed.)  
Cameron Steam Pump Works, A. S., New York, N. Y.  
McGowan Co., John H., Cincinnati, O.  
Park Mfg. Co., Charlotte, N. C.  
Watson, N. A., Erie, Pa.  
**Pumps.** (Steam.)  
Cameron Steam Pump Works, A. S., New York, N. Y.  
Cameron & Barkley Co., Charleston, S. C.  
Cook Well Co., St. Louis, Mo.  
Dean Bros. Steam Pump Works, Indianapolis, Ind.  
Downie Pump Co., Downsville, Pa.  
Gardner Governor Co., Quincy, Ill.  
Mason Regulator Co., Boston, Mass.  
McGowan, John H., & Co., Cincinnati, O.  
Palomester Steam Pump Co., New York, N. Y.  
Stillwell-Bierce & Smith-Valle Co., Dayton, O.  
Textile Mill Supply Co., Charlotte, N. C.  
Watson-Stillman Co., New York, N. Y.  
Wickes Bros., Pittsburg, Pa.

**Pumps.** (Trench.)  
Edson Manufacturing Co., Boston, Mass.  
**Pumping Machinery.**  
Bacon Air Lift Co., New York, N. Y.  
Cook Well Co., The, St. Louis, Mo.  
Dean Bros., Indianapolis, Ind.  
Downie Pump Co., Downsville, Pa.  
Myers, F. E., & Bro., Ashland, O.  
Stillwell-Bierce & Smith-Valle Co., Dayton, O.  
Tate, Jones & Co., Inc., Pittsburg, Pa.  
Wood, E. D., & Co., Phila., Pa.

**Pump Governor.**  
Gardner Governor Co., Quincy, Ill.  
Mason Regulator Co., Boston, Mass.  
**Pump Valves.**  
Power Specialty Co., New York, N. Y.  
**Punching and Shearing Machinery.**  
American Tool Works Co., Cincinnati, O.  
Bertsch & Co., Cambridge City, Ind.  
Long & Allistatter Co., Hamilton, O.  
Niagara Machine & Tool Works, Buffalo, N. Y.  
Robinson, J. M., & Co., Cincinnati, O.  
Royerford Foundry & Machine Co., Royerford, Pa.  
Wood, E. D., & Co., Phila., Pa.

**Quarry and Stonecutting Machinery.**  
Ingersoll-Sergeant Drill Co., New York, N. Y.  
Jeffrey Mfg. Co., Columbus, O.  
Rand Drill Co., New York, N. Y.  
Sullivan Machinery Co., Chicago, Ill.  
**Rack Locomotives.** (See Locomotive Hds.)  
**Railroad Equipment and Supplies.**  
(New and Second-hand.)  
American Frog & Switch Co., Hamilton, O.  
American Locomotive Co., New York, N. Y.  
Bailey-Lobby Co., The, Charleston, S. C.  
Benjamin Iron & Steel Co., Buffalo, N. Y.  
Birmingham Rail & Locomotive Co., Birmingham, Ala.  
Bowen, Jos. E., Norfolk, Va.  
Conard, Thos. P., Philadelphia, Pa.  
Cox, Jr., Justice, & Co., Ltd., Philadelphia, Pa.  
Dalzell & Co., Philadelphia, Pa.  
Fairbanks Co., Baltimore, Md.  
Pitt-Hugh & Co., Chicago, Ill.  
Grant & Williams, New York, N. Y.  
Hyde Bros. & Co., Pittsburg, Pa.  
Johns Mfg. Co., H. W., New York, N. Y.  
Jones, J. E., & Co., Allegheny, Pa.  
Joseph Iron Co., Isaac, Cincinnati, O.  
Kilby Locomotive & Machine Works, Anniston, Ala.  
Malco Co., Cincinnati, O.  
May & Spalding, Atlanta, Ga.  
New York Equipment Co., New York, N. Y.  
Pence, F. M., Inc., Chicago, Ill.  
Porter Co., H. K., Pittsburg, Pa.  
Poulter & Co., Philadelphia, Pa.  
Robinson & Orr, Pittsburg, Pa.  
Sabel, M., & Sons, Mobile, Ala.  
Steel Rail Supply Co., The, New York, N. Y.  
Southern Iron & Equipment Co., Atlanta, Ga.  
Watson, Benj., New York, N. Y.  
Weir Frog Co., Cincinnati, O.  
Zelnicke, W. A., St. Louis, Mo.

**Railroad Frogs and Switches.**  
American Frog & Switch Co., Hamilton, O.  
May & Spalding, Atlanta, Ga.  
Weir Frog Co., Cincinnati, O.

## Rails. (Steel.)

Malco Co., Cincinnati, O.  
Steel Rail Supply Co., The, New York, N. Y.  
**Reamers.**  
Morse Twist Drill & Machine Co., New Bedford, Mass.  
Pratt & Whitney Co., Hartford, Conn.  
Polk, A. J., & Son, Millersburg, Pa.  
Rogers, J. M., Boat Gauge & Drill Works, Gloucester City, N. J.

**Refrigerating Plants.** [See Ice-making Machinery.]

**Regulators.** (Water & Steam Pressure.)  
Crosby Steam Gauge & Valve Co., Boston, Mass.  
Mason Regulator Co., Boston, Mass.

**Regulators.** (Damper.)  
Mason Regulator Co., Boston, Mass.

**Rivets.** (Lead.)  
Stimpson, Edwin B., & Son, New York, N. Y.

**Rock Crushers.**  
Aultman Co., The, Canton, O.  
Austin Mfg. Co., F. C., Harvey, Ill.  
Creson Co., Geo. V., New York, N. Y.  
H. J. Foundry & Machine Co., Plainfield, N. J.

**Road Machine.**  
Aultman Co., The, Canton, O.  
Austin Mfg. Co., F. C., Harvey, Ill.  
Kelly Co., O. S., Springfield, O.  
Kilbourne & Jacobs Mfg. Co., Columbus, O.

**Roofing.** (Felt, Tar, Asphalt, Paper, etc.)  
Armstrong Mfg. Co., The, Richmond, Va.  
Asphalt Ready Roofing Co., New York, N. Y.  
Barrett Mfg. Co., Philadelphia, Pa.  
Bird & Son, F. W., East Walpole, Mass.  
Charlotte Roof & Paving Co., Charlotte, N. C.  
Eastern Granite Roofing Co., Jersey City, N. J.  
Garrett, C. S., & Son, Philadelphia, Pa.  
Johns Mfg. Co., H. W., New York, N. Y.  
National Roofing & Supply Co., Louisville, Ky.  
Robinson Contracting Co., Geo. A., Mobile, Ala.  
Standard Paint Co., New York, N. Y.  
Stowell Mfg. Co., Jersey City, N. J.  
Warren Chemical & Mfg. Co., New York, N. Y.  
Warren-Khetri Co., Philadelphia, Pa.

**Roofing and Siding.** (Metal.)  
American Bridge Co., New York, N. Y.  
Bartlett, Hayward & Co., Baltimore, Md.  
Cortright Metal Roofing Co., Philadelphia, Pa.  
Downman Mfg. Co., Atlanta, Ga.  
Merchant & Co., Philadelphia, Pa.  
Scaife, Wm. B., & Son, Pittsburg, Pa.  
Virginia Bridge & Iron Co., Roanoke, Va.

**Roofing and Siding.** (See Roofing.)

**Roofing.** (Metal Shingles.)  
Cortright Metal Roofing Co., Philadelphia, Pa.  
Merchant & Co., Inc., Philadelphia, Pa.  
Montross Metal Shingle Co., Camden, N. J.

**Roofing.** (Slate.)  
Downman Mfg. Co., Atlanta, Ga.  
Galt, John, & Sons, New York, N. Y.  
Genuine Bangor Slate Co., Easton, Pa.  
McKenna, David, Slaton, Pa.  
Williams, J. E., & Co., Arvonia, Va.

**Roofers' and Tinners' Supplies.**  
National Roofing Supply Co., Wheeling, W. Va.  
Niagara Machine & Tool Works, Buffalo, N. Y.  
Merchant & Co., Inc., Philadelphia, Pa.  
Robinson, J. M., & Co., Cincinnati, O.

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American Mfg. Co., The, New York, N. Y.  
Carpenter & Co., George B., Chicago, Ill.  
Creson Co., Geo. V., New York, N. Y.  
Hunt Co., C. W., West New Brighton, N. Y.  
Link-Belt Engineering Co., Philadelphia, Pa.  
Macomber & Whyte Rope Co., Chicago, Ill.  
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Reliance Gauge Column Co., Cleveland, O.  
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York Safe & Lock Co., York, Pa.

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Woods, S. A., Machine Co., South Boston, Mass.

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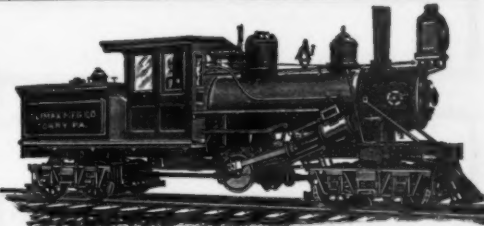
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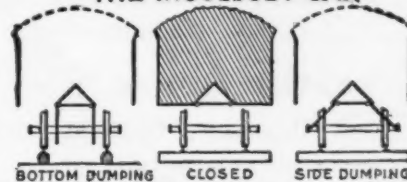
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SOLE MANUFACTURERS OF **FRED G. WEIR'S**

IMPROVED RIGID & SPRING FROGS, CROSSINGS

SINGLE & THREE THROW SPLIT SWITCHES.

FIXED & AUTOMATIC SWITCH STANDS, STEEL

DIE FORMED RAIL BRACES, SWITCH FIXTURES, ETC.

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CROSSINGS, CURVES  
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Complete Power Brake Equipment for Traction Cars.

We are prepared to solve any braking problem that the service presents.

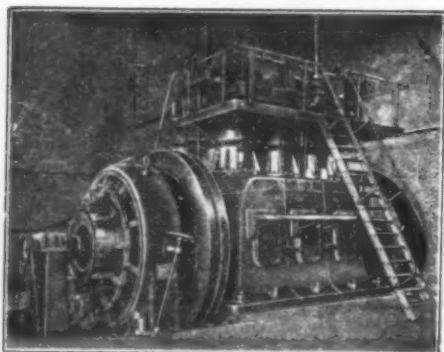
Air Brake Storage System,  
Axle-Driven Air Compressors,  
Independent Motor-Driven Air Compressors,  
Magnetic Brake and Electric Car-Heating Apparatus,

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Catalogue  
and Prices.

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## The Westinghouse Air Brake Co.

Pittsburg, Pa.



## Westinghouse, Church, Kerr & Co.

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Mechanical Stokers.

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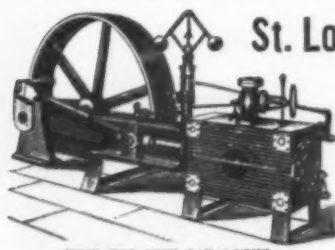
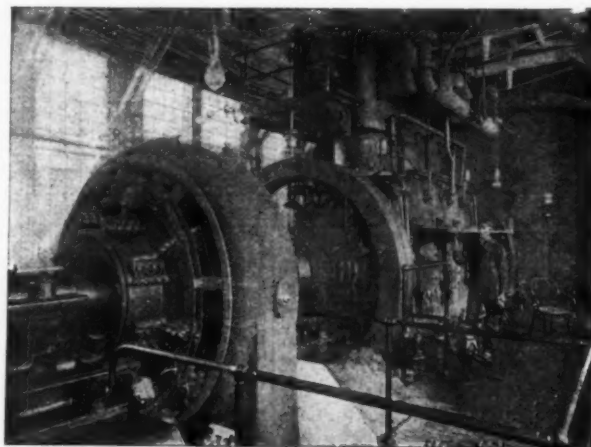
Write nearest office of Westinghouse, Church, Kerr &amp; Co.

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Westinghouse Electric  
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## Brick Machinery.

## Atlas Engine Works.

Indianapolis.

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Branch, 31 S. Canal Street, Chicago, Ill.  
See special ad. in issue each month.

# Classified Index of Advertisers.

For ALPHABETICAL INDEX See Page 29.

## Seals. (Stock Certificates, etc.)

Middleton, J. W., Chicago, Ill.

## Self Measuring Shop Oil Cabinet.

Brewer & Co., E. F., Ft. Wayne, Ind.

## Separators. (Cream.)

Vermont Farm Machine Co., Bellows Falls, Vt.

## Separators. (Dust.)

Allington & Curtis Mfg. Co., Saginaw, Mich.

Stirling Blower & Pipe Mfg. Co., Hartford, Conn.

Sturtevant Co., E. F., Boston, Mass.

## Separators. (Steam and Oil.)

American Tool Works Co., Cincinnati, O.

Austin Separator Co., Detroit, Mich.

Bonar, James, & Co., Pittsburgh, Pa.

Harrison Safety Boiler Works, Philadelphia, Pa.

Webster Warren & Co., Philadelphia, Pa.

## Shaft Coupling. (Compression.)

Davis Machine Co., W. P., Rochester, N. Y.

## Shapers.

American Tool Works Co., Cincinnati, O.

## Sheet-Metal-Working Machinery.

[See Metal-Working Machinery.]

## Sheet Steel and Iron.

American Sheet Steel Co., New York, N. Y.

## Shingle, Lath and Slave Machinery.

[See Woodworking Machinery.]

Lane Mfg. Co., Montpelier, Vt.

Trevor Mfg. Co., Lockport, N. Y.

## Ship Builders. (Iron and Steel)

Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

## Skylights.

Dowman Mfg. Co., Atlanta, Ga.

Merchant & Co., Inc., Philadelphia, Pa.

National Skylight & Construction Co., New York, N. Y.

Noerden Co., E. Van, Boston, Mass.

## Slate. (Roofing and Blackboard.)

Galt, John, & Sons, New York, N. Y.

Genuine Bangor Slate Co., Easton, Pa.

David McKenna, Slatington, Pa.

Williams, J. B., & Co., Arvonia, Va.

## Slaters' Tools.

Galt, John, & Sons, New York, N. Y.

## Smoke Stacks. (Iron and Steel.)

Hammond Iron Works, Warren, Pa.

Keeler, E. Co., Williamsport, Pa.

Schofield, J. S., Sons Co., Macon, Ga.

York Mfg. Co., York, Pa.

## Soapmakers' and Butchers' Mchys.

Dopp, H. Wm., & Son, Buffalo, N. Y.

## Solder.

Hiers, Theo., & Son, St. Louis, Mo.

Ryan, J. J., & Co., Chicago, Ill.

## Speaking Tubes.

Bealy, Chas. H., & Co., Chicago, Ill.

Electrical Material Co., Baltimore, Md.

## Spring. (Bicycle Saddle, Machinery, Railway and Spiral.)

Bealy, Chas. H., & Co., Chicago, Ill.

Boston Belting Co., Boston, Mass.

Cary Spring Works, New York, N. Y.

French Spring Co., A., Pittsburgh, Pa.

Latrobe Steel & Coupler Co., Philadelphia, Pa.

Ladlow-Saylor Wire Co., The, St. Louis, Mo.

## Spelter.

Hiers, Theo., & Son, St. Louis, Mo.

## Sprinklers. (Automatic.)

Bailey-Lebby Co., Charleston, S. C.

General Fire Extinguisher Co., Providence, R. I.

International Sprinkler Co., Philadelphia, Pa.

Pfeuger & Henger Mfg. Co., St. Louis, Mo.

## Stairways. (Iron.)

Lykes, John D., Birmingham, Ala.

## Stamp Mills.

Mecklenburg Iron Works, Charlotte, N. C.

## Standpipes.

Birmingham Boiler Works, Birmingham, Ala.

Hartley Boiler Works, Montgomery, Ala.

Keeler Co., E., Williamsport, Pa.

Means & Fulton Iron Works, Birmingham, Ala.

Virginia Bridge & Iron Co., Roanoke, Va.

York Mfg. Co., York, Pa.

## Steam Engines.

Crosby St. Gage & Valve Co., Boston, Mass.

Lunkenheimer Co., Cincinnati, O.

## Steam Fitters and Supplies.

General Fire Extinguisher Co., Providence, R. I.

## Steam Heating.

General Fire Extinguisher Co., Providence, R. I.

Keeler Co., E., Williamsport, Pa.

Peck-Hammond Co., The, Cincinnati, O.

Warren Webster & Co., Camden, N. J.

## Steam Shovels. [See Dredges and Excavators.]

## Steam Superheaters.

Power Specialty Co., New York, N. Y.

## Steam Traps.

American Blower Co., Detroit, Mich.

Bonar, James, & Co., Pittsburgh, Pa.

Haines Co., W. S., Philadelphia, Pa.

Mason Regulator Co., Boston, Mass.

Sturtevant Co., E. F., Boston, Mass.

Wright Mfg. Co., Detroit, Mich.

## Steamship Lines.

Atlantic Transport Co., Baltimore, Md.

Bay Line, Baltimore, Md.

Merchants & Miners' Trans. Co., Baltimore, Md.

Richmond & York River Line, Baltimore, Md.

## Steel. (Manufacturers of.)

American Sheet Steel Co., New York, Y.

Chester Steel Castings Co., Philadelphia, Pa.

Latrobe Steel Co., Philadelphia, Pa.

## Steel Couplers. (Automatic.)

Latrobe Steel & Coupler Co., Philadelphia, Pa.

## Steel Hoops, Bands.

American Steel Hoop Co., New York, N. Y.

## Steel Rods. (Polished.)

Finished Steel Co., The, Youngtown, O.

## Stills. (Turpentine.)

McMillan Bros. Co., Mobile, Ala.

## Stokers. (Mechanical.)

Westinghouse Machine Co., Pittsburgh, Pa.

## Stoves, Ranges, etc.

Hutchinson Bros., Baltimore, Md.

## Street Lamps.

Diets Co., R. E., New York, N. Y.

## Structural Steel and Iron.

American Bridge Co., New York, N. Y.

American Steel Hoop Co., New York, N. Y.

Bartlett, Hayward & Co., Baltimore, Md.

Belmont Iron Works, Philadelphia, Pa.

Columbia Bridge Co., Pittsburgh, Pa.

Girard Boiler & Mfg. Co., Girard, O.

Morrison & Kindervater, Richmond, Va.

National Skylight & Construction Co., New York, N. Y.

Scaife, Wm. B., & Sons, Pittsburgh, Pa.

Schreiber L., & Sons Co., The, Cincinnati, O.

Virginia Bridge & Iron Co., Roanoke, Va.

## Studs, Nuts.

Hoopes & Townsend Co., Philadelphia, Pa.

Miles, Franklin S., Philadelphia, Pa.

Milton Mfg. Co., Milton, Pa.

## Sugar Mill Machinery.

Wolf Co., Fred W., Chicago, Ill.

## Switchboards, Switches, etc.

Electrical Material Co., Baltimore, Md.

General Incandescent Arc Light Co., New York, N. Y.

Smith, Sam'l J., & Co., Charlotte, N. C.

Western Electrical Supply Co., St. Louis, Mo.

Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

## Tanks. (Iron and Steel.)

Bartlett, Hayward & Co., Baltimore, Md.

Birmingham Boiler Works, Birmingham, Ala.

Caldwell Co., W. E., Louisville, Ky.

Clarendon Boiler Works, N. Clarendon, Pa.

Gem City Boiler Co., Dayton, O.

Girard Boiler & Mfg. Co., Girard, O.

Harry Bros. Co., Dallas, Tex.

Hartley Boiler Works, Montgomery, Ala.

Hazleton Boiler Co., N. W. York, N. Y.

Keeler Co., E., Williamsport, Pa.

Lombard Iron Works & Supply Co., Augusta, Ga.

Means & Fulton Iron Works, Birmingham, Ala.

Petroleum Iron Works Co., Washington, Pa.

Scaife, Wm. B., & Sons, Pittsburgh, Pa.

Smith Co., S. Morgan, York, Pa.

Valk & Murdoch Iron Works, Charleston, S. C.

Virginia Bridge & Iron Co., Roanoke, Va.

Wolf Co., Fred W., Chicago, Ill.

Wood, R. D., & Co., Philadelphia, Pa.

York Mfg. Co., York, Pa.

## Tanks. (Wood.)

Caldwell Co., W. E., Louisville, Ky.

Cypress Lumber Co., Apalachicola, Fla.

Davis, G. M., & Son, Palatka, Fla.

Flint & Walling Mfg. Co., Kendallville, Ind.

Gulf Cypress Tank Co., Mt. Vernon, Ala.

Lewis, H. F., & Co., Ltd., New Orleans, La.

Woolford Wood Tank Mfg. Co., G., Philadelphia, Pa.

## Telephones. (Supplies, Equipment.)

Alexander, Jr., Co., S. B., Charlotte, N. C.

Chesapeake Electric Co., Baltimore, Md.

Electrical Material Co., Baltimore, Md.

Western Electrical Supply Co., St. Louis, Mo.

## Telephone Poles.

Electrical Material Co., Baltimore, Md.

New Orleans Wood Preserving Wks., New Orleans, La.

Houston & Liggett, Lewisburg, Tenn.

## Terne Plate.

Merchant & Co., Inc., Philadelphia, Pa.

## Terra Cotta.

Pomona Terra Cotta Co., Pomona, N. C.

Warner Co., Charles, Wilmington, Del.

## Textile Machinery. [See Cotton Mill Mach.]

## Tinplate.

Merchant & Co., Inc., Philadelphia, Pa.

## Tires, Steel. (Locomotive and Car.)

Latrobe Steel Co., Philadelphia, Pa.

## Tobacco Machinery.

Buckeye Iron & Brass Works, Dayton, O.

Cardwell Machine Co., Richmond, Va.

## Tools. (Machinists' and Mechanics')

American Tool Works Co., Cincinnati, O.

Bealy, Chas. H., & Co., Chicago, Ill.

Landis Tool Co., Waynesboro, Pa.

McCabe, J. J., New York, N. Y.

Morse Twist Drill & Machine Co., New Bedford, Mass.

Pratt & Whitney Co., Hartford, Conn.

## Tools. (Pneumatic.)

Schaefer, W. J., & Co., New York, N. Y.

Standard Pneumatic Tool Co., Chicago, Ill.

## Tools. (Timers')

Niagara Machine & Tool Works, Buffalo, N. Y.

## Torches. (Kerosene.)

Wells Light Mfg. Co., New York, N. Y.

## Towers. (Steel and Wood.)

Caldwell Co., W. E., Louisville, Ky.

## Tramway. (Overhead.)

Cohoes Iron Foundry & Machine Co., Cohoes, N. Y.

Speidel, J. G., Reading, Pa.

## Tramway. (Wire Rope.)

Aultman Co., Canton, O.

Caldwell, H. W., & Sons Co., Chicago, Ill.

Crescent Co., Geo. V., New York, N. Y.

Hunt Co., C. W., New York, N. Y.

Jeffrey Mfg. Co., Columbus, O.

Lidgerwood Mfg. Co., New York, N. Y.

Link-Belt Engineering Co., Newtown (Phila.), Pa.

McLanahan-Stone Machine Co., Hollidaysburg, Pa.

Trenton Iron Co., Trenton, N. J.

## Tube Cleaners.

Challenge Tube Cleaner Co., Lowell, Mass.

## Tubing.

Bealy, Chas. H., & Co., Chicago, Ill.

Ludlow-Saylor Wire Co., The, St. Louis, Mo.

## Turbines. [See Water Wheels.]

Virginia Bridge & Iron Co., Roanoke, Va.

## Valves.

American Steam Gauge Co., Jamaica Plain, Mass.

Boston Belting Co., Boston, Mass.

Crosby Steam Gauge & Valve Co., Boston, Mass.

Fairbanks Co., Baltimore, Md.

Gardner Governor Co., Quincy, Ill.

General Fire Extinguisher Co., Providence, R. I.

Glamorgan Pipe & Foundry Co., Lynchburg, Va.

Jenkins Bros., New York, N. Y.

Ladlow Valve Mfg. Co., Troy, N. Y.

Lunkenheimer Co., Cincinnati, O.

Mason Regulator Co., Boston, Mass.

Mueller Iron Co., H., Decatur, Ill.

Sweet & Doyle, Cohoes, N. Y.

Wolf, Fred, W., & Co., Chicago, Ill.

Wood, R. D., & Co., Philadelphia, Pa.

## Vacuum Machines.

One Mfg. Co., The, Painesville, O.

Titus, E. E., Petersburg, Va.

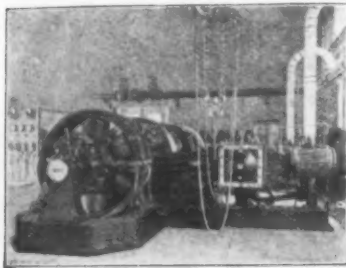
## Ventilators.

Dowman Mfg. Co., Atlanta, Ga.

Panconesi International Ventilator Co., Philadelphia, Pa.

Van Noorden Co., E., Boston, Mass.





**AUTOMATIC**  
Self-Oiling  
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**THE BALL ENGINE CO.**  
ERIE, PENNA.

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CABLE ADDRESS  
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ALL FOREIGN OFFICES  
"BABCOCK"

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SEND FOR OUR BOOK "STEAM"

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SEXTON & ROBBINS Co., Southern Selling Agents, Charlotte, N. C. See "Ad." next week.

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that give satisfaction, regulates the supply of oil at the point of combustion, easy to clean and can be operated with steam or compressed air.

We are the largest manufacturers of Boiler Burners in the world. Write for further facts—FREE.

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BEST ON THE MARKET.

We furnish complete equipments for Burning Oil—the new fuel for the South and West. We manufacture

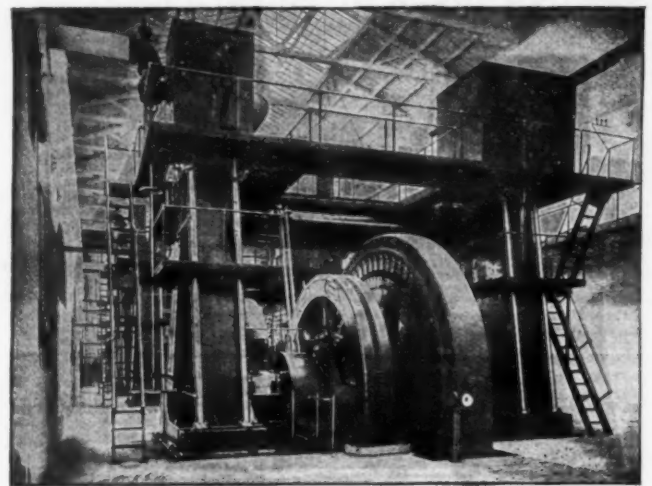


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of any size for any purpose.  
**STACKS AND STANDPIPES.**

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Main Office and Works—Washington, Pa.

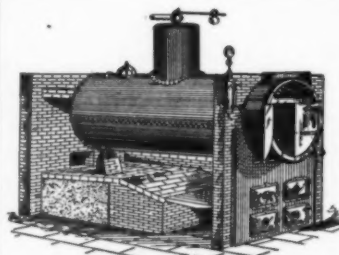
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Mill Engines, Electric Light Engines,  
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Durable,



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The most economic boiler on the market.

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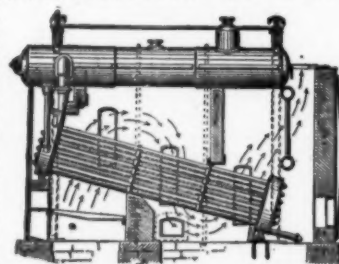
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Stills, Stand Pipes, Steel Stacks, Etc.

Tankage Promptly Supplied.

ALWAYS RELIABLE.

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We furnish complete Steam Plants  
with guaranteed economy as low  
as 1 Pound of Coal Per  
H. P. Per Hour.

## Classified Index of Advertisers.

For ALPHABETICAL INDEX See Page 29.

**Water-Works and Sewerage.**  
 Flint & Walling Mfg. Co., Kendallville, Ind.  
 Wood, T. W. Mobile, Ala.  
 Wood, R. D. & Co., Philadelphia, Pa.

**Weighing Machine.** (Automatic.)  
 N. E. Automatic Weighing Machine Co., Boston, Mass.

**Well Contractors.** (Oil, Artesian, etc.)  
 Andrews, Perry, & Bro., Atlanta, Ga.  
 Austin Mfg. Co., F. C., Harvey, Ill.  
 Bacon Air Lift Co., New York, N. Y.  
 Cook Well Co., St. Louis, Mo.  
 Gould, F. M., Richmond, Va.  
 Hughes Specialty Well Drilling Co., Charleston, S. C.  
 Well Drillers. [See Well Tools and Supplies.]

**Well Tools and Supplies.** (Artesian.)  
 Andrews, Perry, & Bro., Atlanta, Ga.  
 Austin Mfg. Co., F. C., Harvey, Ill.  
 Bacon Air Lift Co., New York, N. Y.  
 Cook Well Co., St. Louis, Mo.  
 Gould, F. M., Richmond, Va.  
 Hughes Specialty Well Drilling Co., Charleston, S. C.  
 Loomis & Nyman, Tiffin, O.  
 Williams Bros., Ithaca, N. Y.

**Wheelbarrows and Trucks.**  
 Jackson Mfg. Co., Harrisburg, Pa.  
 Kilbourne & Jacobs Mfg. Co., Columbus, O.

**Whistles.** (Chimes, Sirens, etc.)  
 American Steam Gauge Co., Jamaica Plain, Mass.  
 Crosby Steam Gauge & Valve Co., Boston, Mass.  
 Lankenheimer Co., Cincinnati, O.

**White Lead.**  
 French, Samuel H., & Co., Philadelphia, Pa.

**Windlasses.**  
 American Ship Windlass Co., Providence, R. I.

**Windmills.**  
 Flint & Walling Mfg. Co., Kendallville, Ind.

**Window Guards.** (Wire.) [See Wire Goods.]

**Wire Cloth.** (Iron Steel, Brass, etc.)  
 Caldwell, H. W., & Sons, Chicago, Ill.  
 Meyers, Fred J., Mfg. Co., Hamilton, O.  
 New Jersey Wire Cloth Co., Trenton, N. J.

**Wire Goods.**  
 Balverton, H., & Son, Baltimore, Md.  
 Bolles Iron & Wire Works, J. E., Detroit, Mich.  
 Dow Wire Works Co., Louisville, Ky.  
 Dufur & Co., Baltimore, Md.  
 Ingalls, Wm., Wire & Iron Works, Detroit, Mich.

Ludlow-Saylor Wire Co., The, St. Louis, Mo.  
 Meyers Mfg. Co., The Fred J., Hamilton, O.  
 New Jersey Wire Cloth Co., Trenton, N. J.

**Wire Netting.**  
 New Jersey Wire Cloth Co., Trenton, N. J.

**Wire Rope Thimbles.**  
 Jackson Mfg. Co., Harrisburg, Pa.

**Wire, Barbed Wire, etc.**  
 Besly, Chas. H., & Co., Chicago, Ill.  
 Ludlow-Saylor Wire Co., The, St. Louis, Mo.

**Wire Rope.**  
 Contractors' Plant Mfg. Co., Buffalo, N. Y.  
 Fairbanks Co., Baltimore, Md.  
 Hazard Mfg. Co., Wilkes Barre, Pa.  
 Lidgerwood Mfg. Co., New York, N. Y.  
 Macomber & Whyte Rope Co., Chicago, Ill.  
 Roebbing's, John A., Sons Co., Trenton, N. J.  
 Trenton Iron Co., Trenton, N. J.

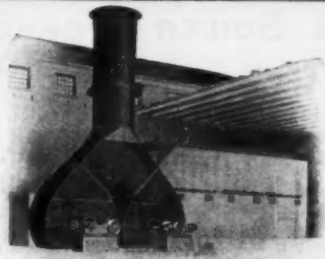
**Wire-Rope Tramways.** [See Tramways.] (Wire Rope.)

**Wrenches.** (Drop Forged.)  
 Atlas Pipe Wrench Co., New York, N. Y.

**Woodsplitting Machines.**  
 Trevor Mfg. Co., Lockport, N. Y.

**Woodworking Machinery.**  
 Chattanooga Machinery Co., Chattanooga, Tenn.  
 Coe Mfg. Co., The, Painesville, O.  
 Cordesman Meyer & Co., Cincinnati, O.  
 DeLoach Mill Mfg. Co., Atlanta, Ga.  
 Egan Co., The, Cincinnati, O.  
 Fay, J. A., & Co., Cincinnati, O.  
 Frank Machinery Co., The, Buffalo, N. Y.  
 Gibbs, W. H., & Co., Columbia, S. C.  
 Grasse, Klusman & Co., Cincinnati, O.  
 Huber Bros., Rochester, N. Y.  
 Lane Mfg. Co., Montclair, N. J.  
 Root, B. M., York, Pa.  
 Salem Iron Works, Winston-Salem, N. C.  
 Shimer, Samuel J., & Sons, Milton, Pa.  
 Smith Machine Co., H. R., Smithville, N. J.  
 Trevor Mfg. Co., Lockport, N. Y.  
 Woods, S. A., Machine Co., South Boston, Mass.

**Zinc.**  
 Merchant & Co., Inc., Philadelphia, Pa.  
 New Jersey Zinc Co., New York, N. Y.



### AMERICAN BLOWER CO.,

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New York, 141 Broadway. Chicago, 1550 Marquette Bldg. London, 70 Gracechurch St.

### SMITH-COURTNEY CO.

Richmond, Va.

SOUTHERN AGENTS FOR THE

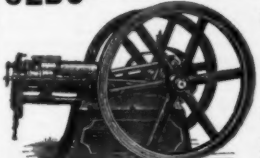
### Improved Bates Corliss Engine

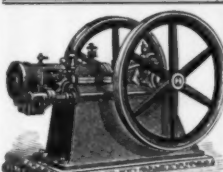
FROM 50 TO 1000 HORSE-POWER.

THE ENGINE for Cotton Mills and Large Factories.

Also full line of Engines, Boilers, Iron and Woodworking Machinery and Pumps. Largest stock of Railroad, Mine and Mill Supplies in the South.

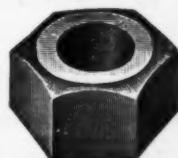
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 are remarkable for their  
**ECONOMY**  
 and  
**DURABILITY.**  
 Notice how few parts.  
 Send for catalogue and learn why it is the best.

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 Gas and Gasoline Engines embody new and important departures in design and operation. Send for catalogue "G." **COLUMBUS MACHINE CO.** Columbus, Ohio.

**THE MIETZ & WEISS Kerosene and Gas Engine**  
**CHEAPEST POWER KNOWN.**  
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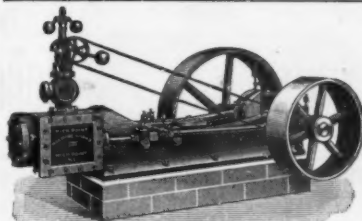
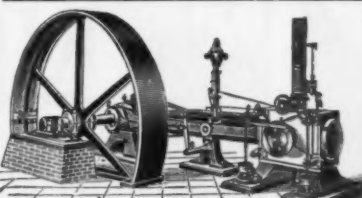
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 Incorporated February 1, 1870.

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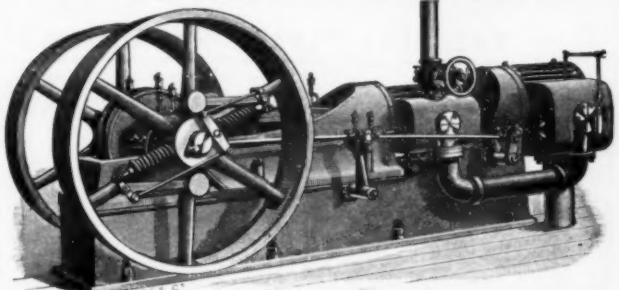
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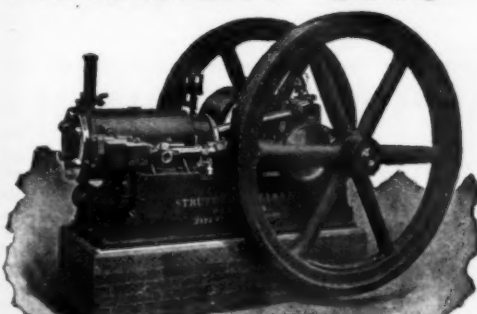
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 Simple,  
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**High Grade Boilers of Various Types.**  
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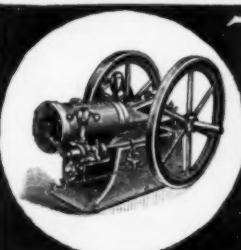

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 Specially Designed For Gas, Gasoline and Oil Engines.  
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 A powerful grip combined with a positive release.  
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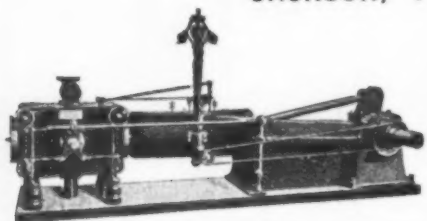
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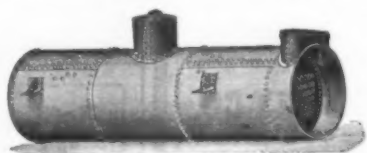


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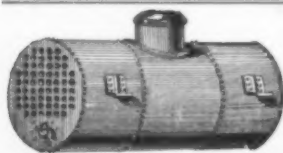


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## Boilers and Engines, HEATERS AND TANKS.

Manufactured by THE BROWNELL & COMPANY, DAYTON, OHIO. P. O. Box 912.  
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A good heater gives you all the heat you need—when you need it most. The best heater gets the most heat from the least fuel, maintains a uniform heat under all conditions, and distributes it evenly throughout the house.

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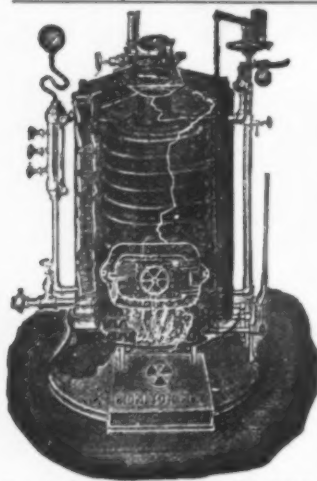
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Catalogue tells why—free.

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For Heating By Steam or Water.

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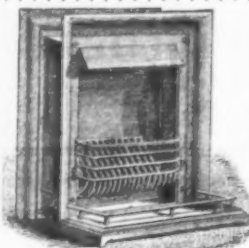
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to dealers or to consumers where there is no agent. It warms two adjoining rooms on the same floor with **One Fire**. For instance—family and children's room, family room and parlor, or bed room or bath room, or hall, or two rooms of an office, etc. **One fire** does the work of **Two**. What you save in the construction of the chimney more than pays for the grate and **saves half the fuel forever**.

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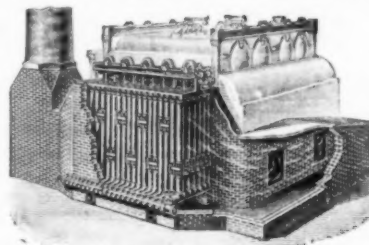
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takes the water from the hot well at 110 degrees and heats it to 250 degrees, meeting every sudden demand for power; prevents sediment in boilers by purifying the water; saves **10 to 20 per cent.** in fuel; using waste gases entirely; no additional outlay for coal is necessary. Send for our free booklet, "Green's Economizer"

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Thousands of Imitators. No Equal.

Will Hold Highest Pressure.

Don't have to use wire and cloth to hold RAINBOW.

Can't Blow it Out.

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Oils for all types of Machinery.

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The cleaning blades and their controlling springs are the only parts that wear out, and these parts are always obtainable at short notice. They can be sent by mail at small cost.

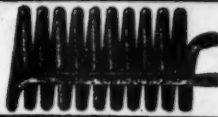
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Have closed Contracts since January, 1900, to July 1st, to equip 37 Plants. We have never failed to receive order to equip all new units installed. We are saving one Company \$450.00 a month, the others in proportion. We will refund all money paid if apparatus does not operate successfully. You cannot ask more, so if you will investigate, we will receive your order.

Address Makers, **SIEGRIST LUBRICATOR COMPANY,** ST. LOUIS, U. S. A.

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to the fact that when you throw away your exhaust steam, valuable heat units go with it. The more exhaust steam you waste the more heat units you lose.



The  
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will use your exhaust steam and heat the water for your boilers. 230° to 212° is easily attainable and at the same time the water is freed of scale-producing elements. This device saves 10 to 20% in your fuel bill. Does this interest you? We also manufacture STEAM AND POWER PUMPING MACHINERY for all purposes.

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Builders of Stand Pipes, Tanks, Stacks, Ore, Coal and Coke, Buggies, Laries, Lumber Trucks, Tram Cars. A large stock of new and second-hand Boilers, cheap.

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This heater is designed with special reference to obtaining highest results and greatest durability. All materials are of a quality and weight to successfully withstand years of usage, and workmanship is of the highest grade.

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SURFACE CONDENSERS.  
EXPANSION JOINTS.  
ARE MADE BY THE  
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## The Wright Steam Separator

Does what a  
Steam Separator is  
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It separates water from the steam; doesn't convert the steam into water. In other words, the steam is not brought into contact with a needless amount of condensing surface.

Perfect separation is accomplished without diverting the steam current from its natural course.

In form, a perfect sphere—the strongest, lightest, most compact form possible for a Steam Separator.

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looses money for you every day. If you want to increase your profit and cut down your expenses, why not order a

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combine the best materials, technical skill and workman-ship in their construction. No machine is shipped without having undergone at least one full day's test under full-rated load.

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A COCHRANE SEPARATOR in a live steam main is a mighty good thing. There may be times when it has nothing to do, but then you have the satisfaction of knowing that it's there waiting for something to come.

Separator insurance is very much like fire insurance—good thing to have at certain times. We insure against fire, not expecting to be burned out, but as a precautionary measure. Separators go even further than this, for they are preventive.

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**Exeter Blowers**  
AND  
VENTILATING FANS  
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not only give better service than other makes, but they last longer and require less repairs. They are of superior design, are extra strong and heavy, and each lubricator is tested at 300 pounds pressure to the square inch before it leaves the factory. Catalogue on application.

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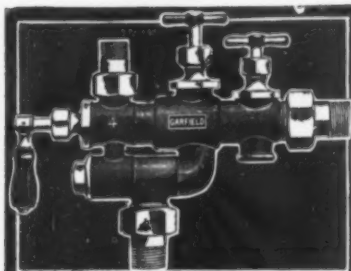




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**E. M. DART MFG CO.**  
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MADE IN THE WORLD.  
NO RUST ON EITHER SIDE.  
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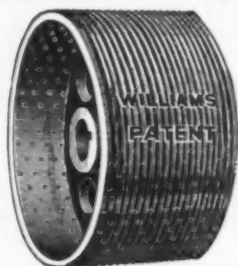
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has no movable parts; requires no adjustment for varying steam pressures; works equally well on high or low lift, hot or cold water. Simple, easily attached, easily operated.  
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Have an adjustable wedge and  
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## THE ONLY Pneumatic Pulley.



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Stop that Drip! Drip!! Dripping!!!

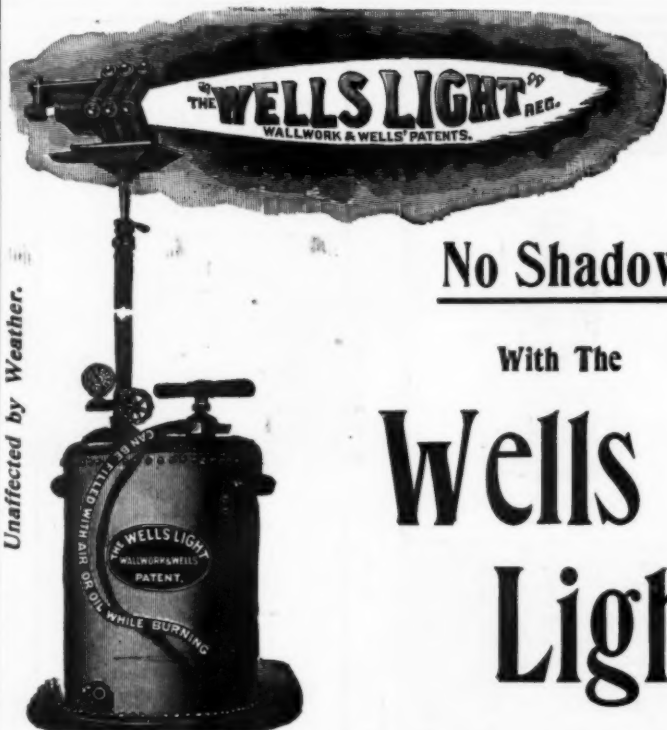
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Manufacturers of **Hangers, Shafting, Machine Moulded Pulleys.**

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800 to 2000 to 4000 Candle-Power from

## KEROSENE OIL.

Portable, Self-Contained, Automatic.

For Contractors, Railroad Construction, Dredges,  
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Over 16,000 in Use.

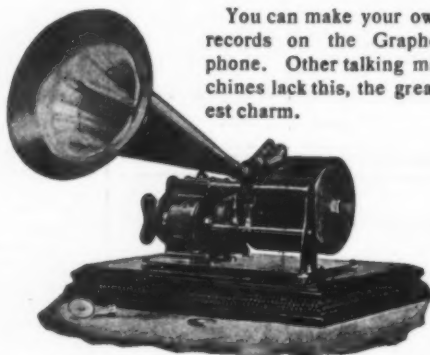
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The  
Graphophone  
Entertains  
Everybody  
Everywhere.



You can make your own records on the Graphophone. Other talking machines lack this, the greatest charm.

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Grand Records, \$1 each. Small Records, 50c. each; \$5 per doz.

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Using **FLAT RECORDS**, are now ready. No other Disc Machine compares with ours.

**THE GRAPHOPHONE WON THE GRAND PRIZE**  
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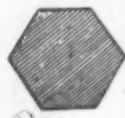
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Manufacturers of Polished Steel

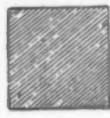
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Piston Rods, Pump Rods, Valve Stems, Fine Machine Rods, Flats, Squares, and Hexagons for Engine Guides, Elevator Slides, Keys, Screws, Bicycle Chains, Etc.

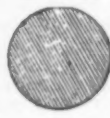
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No. 1.



No. 2.



No. 3.

## Wet Steam and Impure Exhaust Steam

two sources of engine  
trouble which

## Austin Steam Separators

absolutely prevent. The Separator that separates all condensation from live steam and all oil, grease and other impurities from exhaust, all of the time.

We ship to responsible concerns anywhere in the United States on 30 days' trial, to be returned at our expense if not satisfactory.

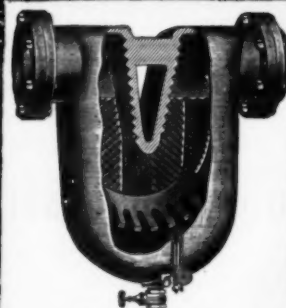


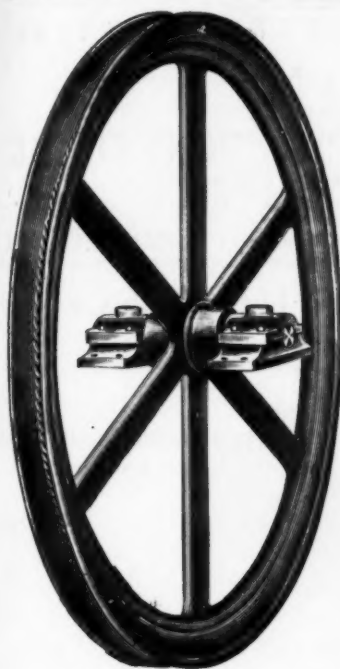
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COMPANY.**

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Advertise in the Manufacturers' Record.

## Sheave Wheel



No. 14.

### Rope-Lined Sheave Wheel,

Made in the following sizes:

18 inches: 2, 3, 4, 5, 6, 7, 8, & 10 feet.

Designed to be placed in a vertical position.

MANUFACTURED BY

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## Do your Belts slip?

Then why not use accurately cut or planed gearing and save a large percentage of your power which you are now wasting? You don't like the noise. Ah! That's where we come in. We are

### Specialists in Noiseless Gearing

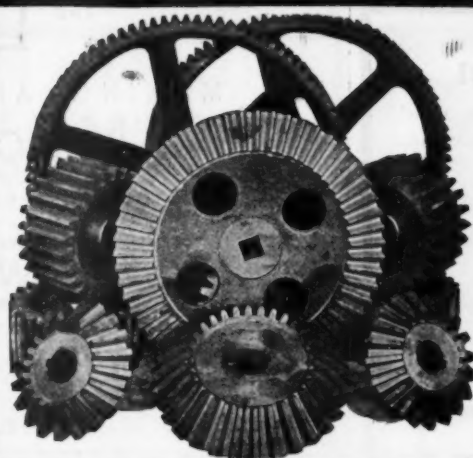
Have been making our Patent Noiseless Pinions—NEW PROCESS PINIONS, we call them—for over twelve years. Hard work it was at first to get them just right, but we kept at it and profited by our experience. Now we have them right in every way. They are noiseless, durable, cleanly, make very little vibration, and don't appreciably wear the gear wheels they mesh with. And they are specified by the leading concerns in the country which have a demand for quiet running gearing. You know what that means. Let us send you catalogue with further details.

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**OILLESS BEARINGS.**  
Metallized Loose Pulley Bushes require no oil or other lubricant, either at the start or occasionally afterwards. Will run perfectly dry for years.  
North American Metallizing Co.  
West Ave. cor. W. 3d St.  
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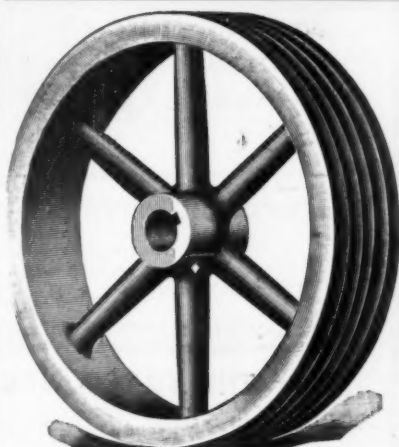
if you are interested in economical and increased production. They help you to reduce the cost of manufacture, and consume only half the power required to operate cast tooth gears.

Write for estimates.

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Manufacturers of

## POWER TRANSMISSION APPLIANCES

Including

### Rope Transmission.

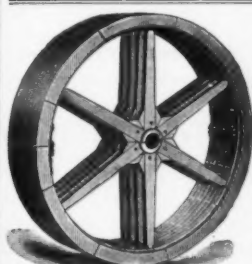
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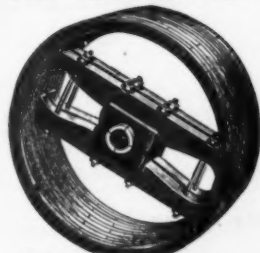
**GILBERT WOOD SPLIT PULLEYS**

**SAGINAW MANUFACTURING CO.**  
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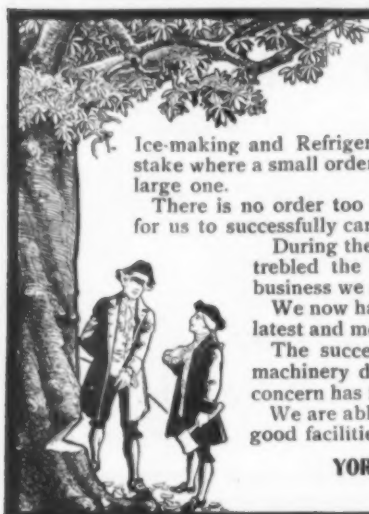
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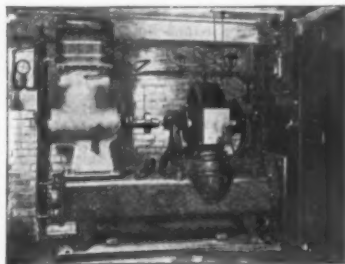
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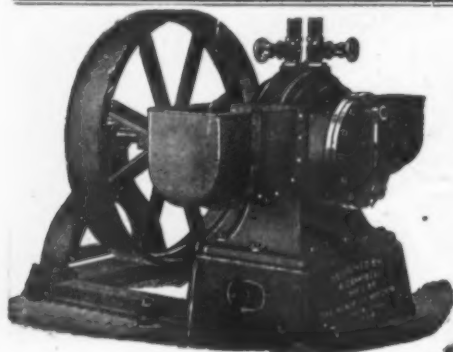
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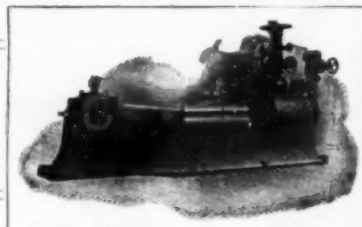
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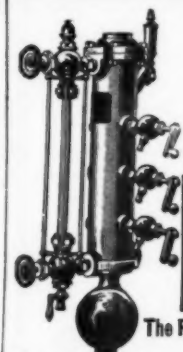
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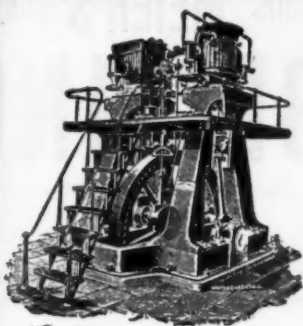
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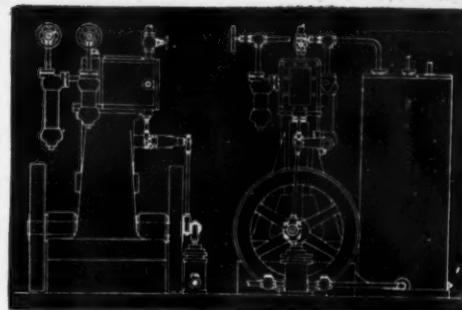
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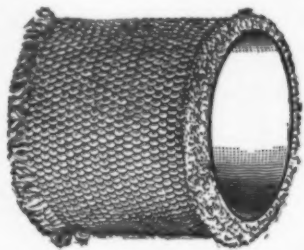
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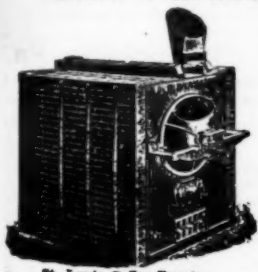
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The Keasbey & Mattison Co., the owners of the patents for magnesia covering, have commenced a suit in the United States Circuit Court for the Southern District of New York against the Philip Carey Mfg. Co., George D. Crabbs, J. E. Breese, Schoellkopf, Hartford & Hanna Co., J. F. Schoellkopf, Jr., James Hartford, W. W. Hanna, C. P. Hugo Schoellkopf and Jesse W. Starr to restrain the defendants from making and selling magnesia covering for boilers and steam pipes containing more than 50% of magnesia, and especially coverings containing 85% of magnesia.

The bill prays for a preliminary writ of injunction, to be continued during the pendency of the suit, and upon the final determination thereof to be made perpetual, and also demands an accounting and damages.

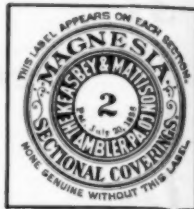
All persons are respectfully requested to refrain from purchasing covering infringing these patents, as such purchasing must of necessity lead to suit. Beware of Fraudulent so-called "Magnesia" Coverings as well as those infringing on patents.



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THOMAS P. GRASTY, Vice-President.

OFFICE: MANUFACTURERS' RECORD BUILDING  
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### COPY FOR ADVERTISEMENTS.

Advertising copy (changes or new advertisements) should reach us Saturday Morning to insure insertion in the issue of the following week.

For the first issue in the month we should receive copy by Friday Morning of the week preceding.

### A Striking Claim for Cheap Power.

Mr. Edward K. Hill, consulting engineer of the International Power Co., manufacturer of steam and compressed-air locomotives and owner of the Corliss Steam Engine Works and the Rhode Island Locomotive Works at Providence, in a letter to the Manufacturers' Record under date of December 17 says:

In your issue of December 12 we notice an article headed "Electric Energy from Oil." This draws a rosy picture of the development of the Texas oil field into a great manufacturing district. With the possibilities in this direction, we are in hearty sympathy.

We note it is assumed that this may be accomplished with steam engines having boilers supplied with oil fuel. To this most natural supposition this company desires to state that, having taken up, through a subsidiary company (the American Diesel Engine Co.), the building of the Diesel engines, this development may not be in steam engines. The Diesel engine uses crude petroleum directly in the cylinder, and produces power at a cost which is far below the best-known steam-engine practice. It is a German invention, which has been thoroughly ripened and brought to a commercial basis in that country. Its spread in Europe has been rapid, and cannot be less so in this country. The importance of this statement and the bearing of it on the case in hand may be better appreciated when we say that this engine will deliver a commercial electrical horse-power at the switchboard on about one-ninth of a gallon of crude oil per hour. If oil be assumed to cost one cent a gallon, which appears high for the field which your article deals with, an electrical horse-power will thus be delivered to the lines at a cost of not over one-ninth of a cent per hour.

It is deemed not untimely by this company to mention this matter somewhat in advance, as having a particular bearing on the subject of your article, and as, perhaps, being a matter of general interest.

The suggestion made by the Greenville (S. C.) News, and editorially commented on by the Manufacturers' Record, that a great electric-power plant be established at Beaumont with oil as fuel, has called forth this very interesting letter from the International Power Co. The statement that with

### HOW MR. FRENCH HELPS SOUTHERN BOYS.

President's Office, Georgia School of Technology.

Atlanta, Ga., December 21, 1901.

Editor Manufacturers' Record, Baltimore, Md.:

Dear Sir—I am heartily in sympathy with your suggestions to interest our men of means in bettering the condition of the poor white boys in the South by making moderate donations for their education along technical lines.

When Mr. Aaron French was deluged with letters asking for assistance several years ago, he applied to me to recommend a moderate investment along this line. I suggested the scholarship method mentioned in your address, and fully explained in the Georgia School of Technology catalogue. The plan has worked well so far. The money donated for this purpose was placed in my charge, and the amount drawn out by the beneficiary was regulated by me. Whenever any amount of cash was given to the beneficiary I would take his note or notes for the amount, payable after graduation. The amount of each monthly note varied from \$10 to \$20, and was payable after graduation without interest. Mr. French has now three scholarships in operation here, at a total cost of \$1500. One hundred and twenty-five dollars per annum is supposed to be a sufficient amount to assist a student through the institution, provided he supplements the donation by a sufficient amount of work during his vacations to provide for clothes and minor expenses.

LYMAN HALL, President.

fuel oil at one cent a gallon the Diesel engine could develop an electrical horse-power delivered to the lines at a cost of not over one-ninth of a cent per hour is calculated to command attention everywhere. It is universally important, but especially to the Texas oil territory.

### The South's Coal Supply.

Its fuel potentiality is one of the best indications of the future of a country. The mere possession of great resources of coal, though, is no guarantee that a State is to assume industrial importance. When, however, the State turns to the uncovering and the marketing of such wealth it begins to take its proper place, and men are able to estimate its prospects. There is no part of the country at present showing greater promise in this respect than the South, and the review on another page of this week's issue of the Manufacturers' Record of the development of the coal trade of the South, written by Mr. F. E. Seward, the American authority on coal, gives a basis for a fair measure of the South's progress industrially during the past ten years. Mr. Seward shows that the mining of coal has advanced in that period from 9,738,755 tons to 25,000,000 tons in West Virginia, from 2,092,064 tons to 4,200,000 tons in Tennessee, from 3,025,313 tons to 5,000,000 tons in Kentucky, from 3,419,962 tons to 5,000,000 tons in Maryland, from 675,205 tons to 2,500,000 tons in Virginia, with slight changes in North Carolina and Georgia, with an increase from 7,600,000 to 10,000,000 in Alabama in three years, from 279,584 to 1,750,000 tons in Arkansas between 1890 and 1901, and an increase from 484,969 tons in 1895 to 968,373 tons in 1900 in Texas, the discovery of oil in the last-named State possibly influencing to some extent its coal-mining energies. Mr. Seward does not believe that this great oil development is likely to affect seriously the general coal industry of the South, which is every year gaining in importance in the export trade of the country with the extension of terminal

facilities at the ports on Hampton Roads, at Savannah, Pensacola, Mobile and New Orleans.

### Mistaken Philanthropy.

Some good-hearted, well-intentioned citizens of Baltimore are preparing to induce the next session of the Maryland legislature to pass acts compelling children between eight and sixteen years of age to go to school, and regulating the employment of minors in industry. The promoters of the measures believe that they are complementary. Neither measure should pass. Before people advocate compulsory education they ought to be satisfied that the children who are willingly sent to school are enjoying facilities which will really educate them and make them better American citizens. The fact that a great many other States have passed compulsory education laws is no reason why Maryland, or any other State not having such laws, should adopt them. One of the gravest mistakes in the history of American educational efforts has been the promptness with which measures which may or may not have worked satisfactorily in one part of the country have been adopted for other parts where conditions are by no means similar. Maryland should avoid further mistakes in that direction.

### Georgia's Good Investment.

The State of Georgia is to be congratulated upon the latest publication of its department of agriculture through Commissioner O. B. Stevens and Assistant Commissioner R. F. Wright. It is entitled "Georgia, Historical and Industrial." A number of publications dealing with various phases of Georgia's development have appeared from time to time, but the demand for information concerning the industrial possibilities of the State is growing, and to meet it in a comprehensive way this volume has been issued. Preceded by a brief history of the State and a general descriptive sketch, the chapters of the book deal with the geology, the

soils, public roads, railroads, water transportation, general agriculture, truck farming, horticulture, dairying, creameries, stock-raising, poultry-raising, floriculture, fish and game, manufactures, education, benevolent institutions, religious bodies, and the State government, together with minute descriptions of each county, and an appendix containing the latest statistics derived from the twelfth United States census and from other sources, the whole being supplemented with 125 illustrations of the vast diversity of features of Georgia life. The publication of this book is one of the best investments that the State of Georgia could possibly have made. It ought to be in the hands of everybody interested in the past, the present and the future of Georgia, and a condensation of this information within 200 pages would make an excellent handbook for use in the public schools of the State.

### For the Common Good.

Supporting vigorously the efforts to secure the establishment of the Appalachian Park forest reserve in Southern territory, including a portion of Southwest Virginia, The Times of Alexandria, Va., which is some distance removed from the site of the proposed park, says:

And if we be asked, "What business is it of The Times?" we shall answer most serenely, if we take the trouble to answer at all, that we think that what benefits any part of Virginia benefits all of Virginia, and that we are not kept from loving our brethren of this Commonwealth simply because they happen to live in or around Abingdon or some other town instead of at Alexandria.

That is an excellent spirit. With many papers there is an inclination not merely to slight the doings of communities in which they are not immediately interested, but, indeed, to antagonize them simply because they are not local. The result has too often been that laudable movements have failed through a conflict of local interests unwilling to yield an inch. The Appalachian Park plan is one for which every newspaper in the South should work vigorously, for the establishment of the great forest reserve in the Southern Appalachians will benefit immediately a dozen Southern States, and, consequently, the whole South, and, indeed, the whole country.

Directly bearing upon this point is the message of President Roosevelt, sent last week to Congress, heartily commending the plan, in which he said:

I transmit herewith a report of the Secretary of Agriculture, prepared in collaboration with the Department of the Interior, upon the forests, rivers and mountains of the Southern Appalachian region, and upon its agricultural situation as affected by them. The report of the Secretary presents the final results of an investigation authorized by the last Congress. Its conclusions point unmistakably, in the judgment of the Secretary and in my own, to the creation of a national forest reserve in certain parts of the Southern States. The facts ascertained and here presented deserve the careful consideration of the Congress. They have already received the full attention of the scientist and the lumberman. They set



forth an economic need of prime importance to the welfare of the South, and hence to that of the nation as a whole, and they point to the necessity of protecting through wise use a mountain region whose influence flows far beyond its borders with the waters of the rivers to which it gives rise.

Among the elevations of the eastern half of the United States the Southern Appalachians are of paramount interest for geographic, hydrographic and forest reasons, and, as a consequence, for economic reasons as well. These great mountains are old in the history of the continent which has grown up about them. The hardwood forests were born on their slopes, and have spread thence over the eastern half of the continent. More than once in the remote geologic past they have disappeared before sea on the east, south and west, and before the ice on the north. But here in this Southern Appalachian region they have lived on to the present day.

Under the varying conditions of soil, elevation and climate many of the Appalachian tree species have developed. Hence it is that in this region occur that marvelous variety and richness of plant growth which have led our ablest business men and scientists to ask for its preservation by the government for the advancement of science and for the instruction and pleasure of the people of our own and of future generations. And it is the concentration here of so many valuable species, with such favorable conditions of growth, which has led forest experts and lumbermen alike to assert that of all the continent this region is best suited to the purposes and plans of a national forest reserve in the hardwood region.

The conclusions of the Secretary of Agriculture are summarized as follows in his report:

1. The Southern Appalachian region embraces the highest peaks and largest mountain masses east of the Rockies. It is the great physiographic feature of the eastern half of the continent, and no such lofty mountains are covered with hardwood forests in all North America.

2. Upon these mountains descends the heaviest rainfall of the United States, except that of the North Pacific coast. It is often of extreme violence, as much as eight inches having fallen in eleven hours, thirty-one inches in one month, and 105 inches in a year.

3. The soil, once denuded of its forests and swept by torrential rains, rapidly loses, first, its humus, then its rich upper strata, and finally is washed in enormous volume into the streams, to bury such of the fertile lowlands as are not eroded by the floods, obstruct the rivers and fill up the harbors on the coast. More good soil is now washed from these cleared mountain-side fields during a single heavy rain than during centuries under forest cover.

4. The rivers which originate in the Southern Appalachians flow into or along the edges of every State from Ohio to the Gulf and from the Atlantic to the Mississippi. Along their courses are agricultural, water-power and navigation interests, whose preservation is absolutely essential to the well-being of the nation.

5. The regulation of the flow of these rivers can be accomplished only by the conservation of the forests.

6. These are the heaviest and most beautiful hardwood forests of the continent. In them species from East and West, from North and South, mingle in a growth of unparalleled richness and variety. They contain many species of the first commercial value and furnish important supplies which cannot be obtained from any other region.

7. For economic reasons the preservation of these forests is imperative. Their existence in good condition is essential to the prosperity of the lowlands through which their waters run. Maintained in productive condition, they will supply indispensable materials which must fail without them. Their management under practical and conservative forestry will sustain and increase the resources of this region and of the nation at large, will serve as an invaluable object-lesson in the advantages and practicability of forest preservation by use, and will soon be self-supporting from the sale of timber.

8. The agricultural resources of the Southern Appalachian region must be protected and preserved. To that end the preservation of the forests is an indispensable condition which will lead not to the reduction, but to the increase of the yield of agricultural products.

9. The floods in these mountain-born streams, if this forest destruction continues, will increase in frequency and violence and in the extent of their damages, both within this region and across the bordering States. The extent of these damages, like those from the washing of the mountain fields and roads, cannot be estimated with perfect accuracy, but during the present year alone the total has approximated \$10,000,000—a sum sufficient to purchase the entire area recommended for the proposed reserve. But this loss cannot be estimated in money value alone. Its continuance means the early destruction of conditions most valuable to the nation, and which neither skill nor wealth can restore.

10. The preservation of the forests, of the streams, and of the agricultural interests here described can be successfully accomplished only by the purchase and creation of a national forest reserve. The States of the Southern Appalachian region own little or no land, and their revenues are inadequate to carry out this plan. Federal action is obviously necessary, is fully justified by reasons of public necessity, and may be expected to have most fortunate results.

## A FIELD RIPE TO PRACTICAL EDUCATIONAL HARVEST.

Jacksonville, Tuolumne County, Cal., December 12, 1901.

To Richard H. Edmonds, Esq.:

My Dear Sir—Allow me to thank you for sending the Manufacturers' Record. I have read with great pleasure the able editorials on the greatest of home questions. You certainly thoroughly realize the vital importance of the educational problem, and all that it means to your people. There must be many advanced and liberal thinkers who are in strong sympathy with you in this distinct movement toward industrial training for the "submerged potential energy" of the South. I have dropped the word education out of my vocabulary. To most people it means a smattering of Latin, a dash of definitions, some odds and ends of various phantoms and untenable superstitions, the poorest possible conception of their own language, with the most profound and stark ignorance of the laws of substance, the laws of their own being, of their real position and duty in the world of action. Their minds move in medieval times, in the oft-repeated discussion of the cloisters and the fattened cloth of the monastery. These educators are turning out a vast number of men who look to the State for support; they would make good Spaniards or Nihilists, instead of their strongest mental fiber being the determination to build up the State. We have to change this illogical and retrograde condition of preparation for the actualities of things. In a century when we know that heat, sound, light, chemical action, electricity and magnetism are modes of motion, and that we can with proper appliances convert any one of them into another, and prove, moreover, that not a single unit of energy is gained or lost, a young man's mind cannot be fed to his lasting advantage with the conviction that to turn "twinkle, twinkle, little star" into monkish Latin, "mica, mica, peora stella," is the height and climax of modern scholarship. Indeed, these days, in the shallowness of Harvard and the so-called universities, men do not even advance to the accuracy of such nursery rhymes.

I sincerely hope that the "submerged potential energy" of your States may be trained with one subject only—to develop its kinetic energy, and in the glory of its real power and coming manhood be the strength, balance and pride of the country. I have been so forcibly influenced by your articles that, had I the honor of being a Southerner instead of an Englishman, I should off-hand throw myself actively into a movement that must claim the strong sympathy and active co-operation of every thoughtful and patriotic man and woman.

Would you allow me to make two or three suggestions drawn from a very wide area in the study of methods and manners of training? To check the tendency towards pauperizing, every student ought to be compelled to do some work. This is a duty to himself, and it is a helpful discipline, and no student ought to be allowed to escape this and so establish the ranks of rich and needy. Technological schools on a popular basis are for production, and the sooner the productive effort commences the more efficient the training and the trained. The mind accustoms itself to a new and most stimulating power. Of all the good things I saw at Hampton, this was the best. It gives a basis of self-reliance, which in its results on character is beyond calculation. We cannot expect very much from men who, without any exertion, allow themselves to be educated entirely at the expense of either the private individual or the State. I am not, of course, speaking of children. Large means are not necessary to begin a movement of this kind in the right direction. A carpenter's shop, a mending shed and a field attached to every schoolhouse in the South can teach more of life and represent more discipline than all the word analysis of the schoolmen. Of what importance is the derivation of the word "book" in all its phases or "Fuchsia" or "Picheringia Montana" to the ordinary working boy. These items belong, with much besides, to the "Notes and Queries" department of the students of philology, and ought never to take the place of a fundamental knowledge of nature. A great French writer said that "curiosity is the appetite of the intelligence." We all remember the delight with which we picked up all manner of learning in the fields, ponds and hedge-rows up to ten, and what is more, assimilated it. Then came the benumbing and bedazzling years in school under great establishments and educators. There all manner of indigestible stuff was forced into us. As a consequence, a large percentage have suffered from cerebral indigestion the rest of their lives.

This occurs from ten to sixteen—a most important and receptive age—when boys should be turned loose in the shops, when they are most wistful to handle tools, and thus learn to handle themselves. Mischief usually is rarely malice. It is the outside signal of repressed restlessness and irritation from long confinement and enforced inactivity. I had the clerical and philosophic discipline of learning by heart fifty lines of Latin every morning, which, from a monastic point of view, would qualify me for my place in the world. All healthy boys yearn for action—to do something, to produce. A training (cultured as it may seem) which runs in opposition to this well-defined natural tendency is for all classes false, conventional and monastic, while in its results it atrophies the most powerful brain cells, those governing co-ordination and association, the cortex of proportion, and hence of intellectual perspective.

I postulate that you are the chief influence in the movement towards founding an industrial system for developing the "submerged potential energy" of the South. No ideal could be higher or work more patriotic. The question at this stage, no doubt, is one largely of ways and means. Indeed, any modern movement is. Let us suppose that the South rises to the occasion, and would be willing to turn over to a "committee for industrial training" the large funds which are annually sent out of each State for foreign missionary purposes; here is a revenue at hand. Its present forlorn purpose is to clothe people who do not wish for clothes, and often use them as turbans, and to force our standard of education upon people who fall under its classical weight. I once saw a missionary arrive in the field of "Divine purpose" with a donkey and a ton of Latin grammars. I was told that he had achieved great distinction at the university, and came direct from London. If the Southern women will throw themselves into this movement, showing the patriotism and devotion to a purpose which in the past has given them distinction above all other women in the history of the world, we shall find the battle half won, having the support of the best in the community.

To put a lad on his feet, to give him what is now denied to him—a chance in life—is a most acceptable religious work, and as such might be taken up by the manufacturers, the mining men, the mill-owners and the best all over the country. From an economic point of view, the South is in much the same condition as Spain—immense undeveloped resources, an immense mass of human potential energy of the best class, idle and unutilized. One cannot blame the boys; which way can they turn? In investigating causes last year in the Peninsula I was asked a score of times by young fellows: "Cannot you, most worthy senor, take us to your country? We will do anything." This spring I came across some lads from Carolina working in the fields hoeing tomatoes at thirty-seven cents a day. I met there exactly the same request: "Say, can't you take us to California, we'd pay you back after a while?" Their education consisted in hardly being able to read. I am told that there are thousands of such young men. What a storehouse of unemployed and undeveloped wealth when applied intelligently to the soil, the forests and to raw material!

I shall go South this winter, take a buggy and a couple of horses and really study the problem from the foundation, living amongst the people to see what are their wants and their needs, and I trust that I may have the pleasure of sending you some of my conclusions. This question is the great question of the Continent. It far outbalances either the Philippines or Cuba. For the South, its careful and skillful solution is either towards progress and life or the settling of a malignant cancer on the body politic.

Yours very truly,

OCTAVIUS I. BATES, F. R. Hist. S., F. R. G. S.

1206 Alice street, Oakland, Cal.

### The Southern Farm Magazine.

In its January issue the Southern Farm Magazine suggests that in the shifting of capital and labor as a consequence of recent developments in American industries may be the basis for a combination of the two interests in Southern development. It says that men anxious to get good interest for their money can make no mistake in turning their attention to two undertakings on Southern soil. One is agriculture and the other town-building, the creation of a community as a center

of trade and industry resting upon nearby agriculture and moving to such localities surplus labor of great cities. It contends that if investors would only recognize that agriculture, to be successful, is just as much a business as the conduct of a manufacturing plant or the operation of a railroad, they would recognize at once their opportunity in the South. There are hundreds of thousands of acres of rich land there yet to be brought into cultivation. Many of these lands are far removed from towns or cities. Their settlement in the right way on a strictly

business basis, without regard to economic dreams or impracticable philanthropy, would demand the creation of a town. The enterprise suggested would include the employment of men trained in agriculture, in poultry-raising and in the care of stock, in lumbering, railroad-building, and in all the occupations bearing upon successful agriculture. The settlers from the city would be given the advantage of instruction from these teachers, and would be helped over the preliminary difficulties by such trained knowledge. The Southern Farm Magazine asks why cannot capitalists invest their surplus in the South and induce surplus labor to quit the overcrowded cities and to become farmers.

One of these opportunities, and a great one, is in stock-raising. If anybody doubts the many advantages possible in this undertaking he should read the elaborate article in this issue by Prof. Andrew M. Soule of the University of Tennessee on the beef industry of the Middle South. Professor Soule presents statistics comparing, from the standpoint of stock-raising, the Middle South with the Central West, the richest and most prosperous section of the United States. It is evident from his figures that the potential productive capacity of the Middle South will soon become an important matter to the stockmen of the South, for the time has come when circumstances will permit the rapid development of stock husbandry in the South.

Another article points out the favorable location in more than half a dozen States for profit in stock-raising. That the South is attracting greater and greater attention, not only by men of the North and West who are becoming permanent settlers there, but also by everybody interested in American farming, is shown by the large amount of space given to phases of Southern agriculture by Secretary Wilson of the National Department of Agriculture in his annual report. Extracts from this report bearing specially upon the South are published at length in this issue. The various departments of the Magazine, arranged for the pleasure and profit of the lover of books, the home-maker and the observer of current affairs, are more entertaining than ever.

The Southern Farm Magazine is published monthly by the Manufacturers' Record Publishing Co., Baltimore, Md. Its regular subscription price is \$1 a year, but for a few weeks a special rate of 25 cents a year is offered to new subscribers. This is an offer which no one interested in everything contributing to the upbuilding of the South can afford to disregard.

#### Bark-Extract Location Wanted.

George Oberne & Co., 181 East Division street, Chicago, in a letter to the Manufacturers' Record, referring to the partial destruction of their tanners' bark-extract plant at Knoxville, state that they are considering the question of rebuilding at some other point, and that a tannery may be operated in connection therewith. They wish to gain information as to desirable localities, and add:

"The successful operation of a plant of this nature involves:

"1. A good local supply of chestnut wood.

"2. A good local supply of chestnut-oak bark.

"3. A good local supply of hemlock bark.

"4. The constant supply of water of not less in volume than what would pass through a 12-inch pipe with a velocity of about forty feet a minute.

"5. A good coal supply.

"6. Good railroad facilities for receiving

ing bark and other supplies from local points, and of hides, barrels, etc., from other sections or the points of manufacture.

"7. Good railroad facilities for the expeditious delivery of the product to customers, and equitable freight rates as compared with competing plants."

#### Free Sites Offered.

Mr. C. T. Wyrick of Sherman, Texas, writes to the Manufacturers' Record that that city is offering free sites for a cotton mill, a knitting mill, a soap factory, a suspender factory, a glove factory, a paper mill and a furniture factory, and he suggests that the use of oil as fuel is an item to be considered in that connection.

#### For a Woolen Mill.

A Northern correspondent of the Manufacturers' Record writes that he is about to perfect plans for the location of a textile industry, using woolen machinery, in South Carolina, and desires a good reliable person to join him in the organization of a company and in placing a portion of the bonds.

For several years, under the auspices of the national department of labor, studies have been made of groups of negroes in a number of cities in the black belt and in typical communities, such as Farmville, Va., and Sandy Springs, Md. The latest study in this line, by William Taylor Thom, Ph. D., deals with the negroes of Litwalton, Lancaster county, Virginia. Dr. Thom's study gives a typical picture of two phases of the connection of the negro with the oyster industry, their effect upon the negroes themselves and upon the community in which they live. He has made a most minute and comprehensive study of the negroes in their economic and social relations, and has presented an interesting study of the conditions in a portion of Virginia where the negro seems to be losing ground in more ways than one. Significant of this tendency is the fact brought out by Dr. Thom that of the ninety-two families of the hamlet, containing 462 persons in all, forty of the children of various ages are absent from the neighborhood, nearly half of them being in Baltimore, six or eight in Philadelphia, and a few in Washington and Atlantic City; but the additional fact that in spite of the hopefulness of some of the younger and thrifty negroes of the Litwalton neighborhood, the older negroes were emphatic in their opinion—in which the whites of the community seem to coincide—that the younger set of negroes might be able to read and write better and might be worth more money than their fathers, but that in respect for the rights of others, in manners and character, they were distinctly degenerate. In this study Dr. Thom has essayed to compare conditions of the negroes at Litwalton with conditions shown in his study of the Sandy Spring neighborhood and in the study of the Farmville community. As far as his comparison goes it is interesting and scholarly, but the material is hardly yet exhaustible for a full treatment of the subject in that way, though Dr. Thom has shown what may ultimately be done.

One of the features of the exhibits in the Woman's Building at the Charleston Exposition is a room full of specimens of what South Carolina has done in the past and is doing now in silk culture. The articles include a dress made of Carolina-raised silk and worn in ante-Revolution days, copies of the Columbia Register printed in 1849 on silk raised in Richland county and a lot of cocoons grown in Charleston and elsewhere this year.

## COAL TRADE OF THE SOUTH THIS YEAR.

By F. E. Saward, Editor of the Coal Trade Journal.

[Written for the Manufacturers' Record.]

Probably no portion of this country has attracted such wide attention and investment of outside capital during the year now closing as has that section south of the Pennsylvania line and east of the Ohio and Rio Grande rivers. The development there of the mineral resources within the borders of the States named has been large, while the prospective is beyond the bounds of any imagination, and only one who has kept in touch with the trade conditions from year to year and month to month is really able to form a just estimate of what has been done during the past season actually or in the way of preparation for the future. To go West was the shibboleth a few years ago, but to go South means wealth to those willing to wage a fair fight.

It is hardly practicable to give much of a review of affairs during the past year in the allotted space, but we shall endeavor to cover the vital points. In the first place, the interests of the several States in recent years will be shown, and an estimate of the output for this year.

In the State of Virginia the production has grown as follows:

Year.	Short tons.
1892.....	675,205
1893.....	820,339
1894.....	1,299,083
1895.....	1,368,324
1896.....	1,254,723
1897.....	1,325,392
1898.....	1,315,214
1899.....	2,105,791
1900.....	2,393,754
1901.....	2,500,000

The principal districts, as usual, are Tazewell and Wise counties, for Chesterfield county falls away behind of late years.

No State in the Union is more favored in the extent and diversity of its mineral deposits than West Virginia. Her coal embraces all grades of bituminous, steam, coking and gas coals of the highest qualities. The natural waterways, improved slack-water navigation and increasing railroad facilities are important factors in the development of the resources of the State.

West Virginia contains more of the great Appalachian coal field than any other State. The total area embraces about 16,000 square miles—more than 80 per cent. of the total bituminous areas of Ohio and Pennsylvania combined, 60 per cent. more than Pennsylvania alone, and 2000 square miles more than Kentucky and Tennessee combined. The area underlain by coal is about two-thirds of the total area of the State. Total product in 1900 was 22,647,207 short tons, and no doubt this will be increased to 25,000,000 tons this year.

Year.	Short tons.
1892.....	9,738,755
1893.....	10,708,578
1894.....	11,627,767
1895.....	11,387,961
1896.....	12,576,296
1897.....	14,248,159
1898.....	16,700,999
1899.....	19,252,995
1900.....	22,647,207
1901.....	25,000,000

The heavy output in the Fairmont district during the current year has been the cynosure of every eye in trade circles. It has attracted more attention to this State than any other one thing. The consolidation of interests in that and the Clarksburg district warrants a better price being obtained. The shipments at Newport News and at Norfolk have been the heaviest of years; the opening up of new fields leads to a possible building of a new shipping pier at that point. The Little Kanawha Railroad is to be completed, and that will give another line for the coal of this State to the West.

Newport News has a record of 300,000 tons a month as shipments.

The history of coal mining in North Carolina dates from 1889. The Egypt mines, now called the Cumnock, were opened in December of that year, and yielded 192 tons. Since that time the product has fluctuated from 25,000 tons down. Recent figures are:

Year.	Short tons.
1895.....	24,900
1896.....	7,813
1897.....	21,280
1898.....	11,495
1899.....	26,896
1900.....	17,734

There has always been litigation in regard to this property, and only recently an order was issued to restrain the sale of the Cumnock coal mine, S. A. Henszey, former owner, making application for the order on the ground of breach of faith. This has, however, been dismissed. A line of road which may help this State is projected, by which it is expected that Charlotte, N. C., will have direct communication with the coal fields of Tennessee. The route is via Morgantown, N. C., crossing the Blue Ridge mountains at Coffee Gap. The work of construction will probably be begun within a few months, it is reported.

The coal product of Georgia does not amount to much. In 1900 it was 315,557 tons, and this year it may amount to 300,000 tons. A large percentage of the miners engaged in the production of Georgia coal are State convicts employed under the lease system, and as their efficiency is apt to vary considerably from year to year, the labor statistics of Georgia are scarcely comparable to those of other States. No machines are employed in any of the mines, and on account of the convict employment strikes are of rare occurrence. Recently coal, the product of this State, has been tried on steamers trading out of Savannah, and it is said to have given good results, so that one may look to see at this port quite a business done in "bunker" coal.

Kentucky is the only State of the Union whose product is obtained from any two of the great fields. The eastern section of the State is crossed by the Appalachian system, while the central, or Illinois field, has its southern extremity in the coal-producing counties of Western Kentucky. The tonnage is a growing one, as may be seen from the tabulation herewith:

Year.	Short tons.
1892.....	3,025,313
1893.....	3,007,179
1894.....	3,111,192
1895.....	3,357,770
1896.....	3,333,478
1897.....	3,602,097
1898.....	3,887,908
1899.....	4,607,255
1900.....	4,807,600
1901.....	5,000,000

The labor troubles in one section of the State were serious, being most warlike. A shipment of canal coal from the Kentucky fields opened by the construction of the Ohio & Kentucky Railway has been made over the new road and the Lexington & Eastern. This will open up an important trade in a first-class grade of fuel to Western cities and towns.

The production in Tennessee has grown as follows:

Year.	Short tons.
1892.....	2,092,064
1893.....	1,902,258
1894.....	2,180,879
1895.....	2,535,644
1896.....	2,663,106
1897.....	2,888,549
1898.....	3,022,896
1899.....	3,330,659
1900.....	3,804,048
1901.....	4,200,000

Much development work is noted at mining districts within the State; much



new work is projected for the coming year. The first coke ovens ever built in Cumberland county were recently completed at the mines of the Chicago-Tennessee Company on Mammy creek. This company has so much excellent coking coal it has decided to erect a large number of ovens. The Bon Air Coal Co. is also making preparations to establish a coking plant. A recent publication by the Memphis Board of Trade states that there are now \$50 manufacturing enterprises in that city, and that the volume of business transacted in the last fiscal year was \$267,000,000. Naturally, Memphis is becoming more important as a coal market, and the recent rate war on coal was simply an indication of the effort being made by various producing interests to get a share of the large business now transacted at or from Memphis. We have the authority of General Wilder for the statement that there have been eight coal mines opened up on the Tennessee Central Railroad recently, and shipments are being made to Nashville, Chattanooga, Atlanta and other points. This line is to be developed as a leading coal carrier.

The Tennessee Central and the Cumberland Coal & Coke Co. will work together, and, indeed, the owners of the properties are almost identical, as Col. Jere Baxter and the St. Louis syndicate, owning both properties, are associated with Mr. Nat Baxter. They have all the capital necessary to carry out the elaborate plants which have been evolved by the president of the Cumberland Company. It is also reported that fifteen new mines were opened in the Knoxville field by new or old companies in 1900, and it is estimated that as many will be opened for 1901.

After West Virginia, the greatest coal State of the South is Alabama. The output for 1899 was but 7,600,000 tons, and in 1900 it had grown to 8,400,000 tons, and the mine inspector's estimate for 1901 is 10,000,000 net tons. The Alabama coal business is clearly divided into three important branches—the production of coal for coke making and industrial use at or near the point of production, the supply of locomotive fuel, and the supply of coal for domestic purposes and steam users in communities near the mines. There has as yet been very little done in the shipment of Alabama coal to points beyond the State, if we consider how large is the total tonnage. Shipments to New Orleans, Pensacola and Mobile are growing, but slowly.

At the Louisville & Nashville wharves at Pensacola during November and the early part of December thirteen large ocean-going steamships loaded cargoes for ports in various parts of the world. Most of this export business is coal from the fields of Jefferson, Walker and Bibb counties, Alabama. The bunkering of steamers at this port has increased in the past few years, 54,343 tons having been supplied to steamers for bunkers during the year 1900. The exports for the year 1900 amounted to 82,186 tons. At Mobile the tonnage was 294,970 tons in 1900, as against 189,300 tons for 1899. But the most noticeable features of all are that of these large receipts only 12,383 tons were exported, leaving the remainder to supply the demands of the different industries. There is a question in the minds of some persons as to the effect of the Texas oil on the trade of this port, but it is too early yet for a decisive answer thereto to be given. The recently-completed Lake Borgne canal connects Lake Borgne and Mississippi sound with the Mississippi river seven miles below New Orleans, and furnishes a connecting link between the extensive system of in-

land waterways made available by the work that is being done in improving and opening the Warrior river. The purpose is to establish an unbroken line of slack-water navigation from the Alabama coal and iron fields to New Orleans.

E. O. Hopkins, president of the Sloss-Sheffield Steel & Iron Co., is authority for the statement that Alabama operators have not felt fuel oil in any of their territory as far as volume of trade is concerned, his company doing twice the business at New Orleans ever done there. Mr. Hopkins attributes the superb state of the coal trade to the constantly increasing number of manufacturing enterprises in the Southern field. To control the lower river trade as far as possible, the Monongahela River Consolidated Coal & Coke Co. recently bought the property of the Corona Coal & Iron Co. The property at present has an annual output of about 400,000 tons, and it is said that extensive improvements are contemplated which will increase the capacity of the mines to 1,000,000 tons a year. As indicating the industrial progress of this State, it may be mentioned that the steel-rail mill of the Tennessee Coal, Iron & Railroad Co., which has been under construction at Ensley, and which will be an adjunct to the steel plant of the company at that place, will commence the manufacture of steel rails by January 1. The output will be the first rails for trunk lines of railway ever made in the South.

Maryland is one of the most important of the Southern coal-producing States, and it has a record of sixty years to its credit as a part of the fuel trade of our country. The State owes its reputation in this line to two counties in the extreme western section, viz., Allegany and Garrett. The coal veins are confined to a comparatively small territory. The principal mining section is on the George's creek, where seams are found along a belt which extends parallel with a branch of the Baltimore & Ohio Railroad. The belt is about four miles wide, and the veins range from fourteen feet downward, the first being called "Big Vein," and yields about ten feet of mined coal. This territory, although comparatively limited, is considered by experts as being capable of holding out for many years with the larger operators. The first mines were opened in 1842, and since that time nearly 100,000,000 tons have been taken out. The yearly production of late years has been in the neighborhood of 4,000,000 gross tons, and it has been shipped to market via the following routes:

Year.	Railroad.	Canal.	Total.
1892...	1,864,469	263,821	2,128,290
1893...	1,718,409	337,256	2,055,665
1894...	1,615,991	304,437	1,920,428
1895...	1,618,175	313,735	1,931,910
1896...	1,930,609	364,474	2,295,083
1897...	2,308,901	263,327	2,572,228
1898...	2,556,961	228,136	2,785,097
1899...	2,709,809	192,423	2,902,232
1900...	2,658,094	111,134	2,769,228

In addition to the quantity named as shipments, there is now a local trade, for locomotive and other purposes, of about 350,000 gross tons annually. Put into short tons, as are the other statements in this article, the total product figures as below:

Year.	Short tons.
1892.....	3,419,962
1893.....	3,716,041
1894.....	3,501,428
1895.....	3,915,585
1896.....	4,143,936
1897.....	4,442,128
1898.....	4,674,884
1899.....	4,807,396
1900.....	4,624,688
1901.....	5,000,000

The larger shippers in this district and their gross tons for the year 1900 were:

Company.	Tons.
Consolidation Coal Co.....	1,160,155
Black-Sheridan-Wilson Company.....	635,055
George's Creek C. & I. Co.....	355,807
American Coal Co.....	322,107
Maryland Coal Co.....	321,559
Davis C. & C. Co. (Franklin).....	192,120
New Central Coal Co.....	116,765

The cause of the great falling off in the tonnage from this State during 1900, as compared with 1899, was owing to a four months' strike to secure an advance in wages. In 1894 the rate paid was forty cents a ton for mining run-of-mine coal. In 1895 a voluntary advance to forty-five cents was made, which continued until the spring of 1900, and then, as stated, a strike resulted from an unsuccessful demand for a 60-cent rate. Work was resumed at operators' original offer of fifty-five cents.

In order to meet the demand for coal abroad, a pier at Curtis Bay, near Baltimore, has been erected. The pier was opened for business September 24, 1900. It is 800 feet long from shore line to deep-water terminus. It is sixty feet wide and forty-five feet high, and its operations almost automatic.

In the Indian Territory there is also a large development of the coal resources, and while in 1890 there was 752,832 short tons to its credit, in the year 1900 the total was 1,922,298 tons, and the Territory was seventeenth in rank of the coal producers of the United States. The record of the estimate for the current year is shown below:

Year.	Short tons.
1891.....	1,091,032
1892.....	1,192,721
1893.....	1,252,110
1894.....	969,696
1895.....	1,211,185
1896.....	1,396,646
1897.....	1,336,380
1898.....	1,381,466
1899.....	1,537,427
1900.....	1,922,298
1901.....	2,250,000

The principal operations in the Territory in the fiscal year ended June 30, 1901, as reported by the inspector of mines, were as follows:

Producer.	Tons.
Osage Coal Mining Co.....	258,893
Atoka Coal & Mining Co.....	309,194
Kansas & Texas Coal Co.....	121,198
Wilborton Coal & Mining Co.....	122,791
Southwestern Coal & Improv. Co.....	185,064
Mexican Gulf Coal & Trans. Co.....	96,052

The Consolidated Coal Co. is a new corporation which will play a most important part in the development of the coal fields of the Indian Territory, and the handling of the output of the coal mines and coke ovens, composed as it is of a number of the most successful and practical mine operators in the Southwest. This company, which has its headquarters and sales department in South McAlester, handles the output of a number of large mines in the Choctaw Nation, and also the product of the extensive coke ovens at Aldeson and Howe, and its members are individually and actively engaged in mine operations. The coke ovens at Howe are a great success—their product being of good quality—using up the slack or fine coal, so that the coal sent to market is lumpy and of first quality for steam or domestic purposes. The yield is about one ton of coke to two tons of coal.

In Texas the output has been as follows in the years named:

Year.	Short tons.
1895.....	484,959
1896.....	544,015
1897.....	639,341
1898.....	686,734
1899.....	883,832
1900.....	968,373

Texas has grown in its coal output in the past ten years quite fairly, the tonnage having increased from 128,216 net tons in 1890 to 968,373 tons in 1900. There are twelve counties in the State in which coal is produced, but, with the exception of Milam county, there are not more than two mines in any one county. Bituminous coal is produced in the following seven counties: Coleman, Erath, Maverick, Palo Pinto, Parker, Webb and Wise. Lignite coal is produced in five counties, which are as follows: Bastrop, Medina, Milam, Robertson and Wood. The total production of bituminous coal

in 1900 was 715,461 tons, and the production of lignite was 252,912 tons. The tonnage was divided as follows in 1900:

County.	Tonnage.
Coleman, Erath, Maverick, Palo Pinto, Parker, Webb, Wise.....	715,461
Lignite—Bastrop, Medina, Milam, Robertson, Wood.....	252,912
Total.....	968,373

The discovery of oil in this State may have some effect on the coal production, and therefore it is not likely to show any great increase for 1901 over and above that of 1900; at the same time it is well to know that the result of the use of oil in California as fuel has not tended to decrease the amount of coal used. Does not the one industry stimulate others? In the end there will be so great an industrial development in Texas that all fuels may find use.

Arkansas is coming up as a coal producer. For the year 1890 it was credited with but 279,584 net tons, and for 1900 it has 1,447,945 tons to its credit, and was ranked as number nineteen of the list. The great increase is a matter of but recent growth, as this statement of the coal product of Arkansas since 1897, by counties, shows:

County.	1897.	1898.	1899.	1900.
Franklin.....	281,299	328,412	257,196	442,406
Johnson.....	568,981	871,067	580,358	999,479
Sebastian.....	6,000	6,000	6,000	6,000
Small mines.....	6,000	6,000	6,000	6,000
Total.....	856,190	1,206,479	843,554	1,447,945

\*Includes also product of Logan county.

One may safely put this State down for 1,750,000 tons for the year 1901, as the development lately has been along the lines of improvements around Fort Smith. There is a great awakening in this respect. To the east, along the line of the Fort Smith & Little Rock Railroad, are the mines of Coal Hill, Spadra, Dunning and other points, whose daily output at this time runs up to about 3000 tons. Near Russellville, a little south of the mines just named, also on the Fort Smith & Little Rock Railroad, are the celebrated Onita mines, which turn out the only real anthracite coal yet found in this area. The other coals of this belt are called semi-anthracite. The Onita coal sells in competition with the Pennsylvania anthracite at certain points. On the line of the Arkansas Central, a new road just constructed from Fort Smith to Paris, Logan county, Arkansas, quite a number of new openings are in operation, and the coal is of an extra fine quality. The so-called "smokeless" coal of this State has attracted attention, and a powerful organization headed by prominent Northern capitalists has been formed within the past few weeks to develop it in an extended fashion for the Southern and Southwestern market.

#### For Oyster Planting.

The State board of fisheries of Virginia has decided to recommend the passage by the general assembly of an act authorizing the lease to Mr. Frank W. Darling and others of Hampton of a large tract of oyster ground with a view to making an experiment in deep-water planting. At the last meeting of the board Mr. Darling stated that he proposed to try oyster-planting in water fifteen feet deep or more, and that he desired to rent 3000 acres of oyster grounds, for which he agrees to pay twenty cents per acre per annum for the first five years and forty cents per annum for the next fifteen years. The low figure offered for the first period is owing to the doubtful nature of the experiment and to the fact that even were it successful it would bring small returns to the investor during the five years, whereas, if successful, it would mean a handsome profit, for which they agreed to pay double the rental for the first period.

## ULTIMATE VALUE OF TEXAS PETROLEUM.

By C. F. Z. Caracristi, C. E., E. M.

[Written for the Manufacturers' Record.]

Some time ago I undertook to point out, and this against the views of petroleum experts, that petroleum from the Texas field would be worth sixty cents a barrel. I then stated that this value would be reached within a year, giving plenty of margin in time to my prediction to either verify or disprove my statement. This expression was contained in the Manufacturers' Record of October 3, and now I am face to face with the following facts, which will not only be of interest to the petroleum operators in the Texas field, but to the world's petroleum industry. Three tests have been made, and their proximity in result are remarkable in showing that the world's chemists are basing their investigations upon the same line of thought and deduction. The "cracking" of the Beaumont oil, which nine months ago was declared impossible, is now an accomplished fact. The three tests have been made in Belgium, France and the United States. The Belgian test gave:

	Per cent.
Kerosene.....	23
Lubricants.....	10
Light oils.....	2

Total merchantable oils outside of asphalt, etc..... 35

The French test gave:

	Per cent.
Light oils.....	2.50
Kerosene.....	24.38
Lubricating oils.....	3.47

Total merchantable oils outside of asphalt..... 36.35

American test by a run of 600 barrels by the Guffey Company, Beaumont, gave:

	Per cent.
Illuminating oil.....	25.31
Lubricating oils.....	10.11
Light distillates.....	2.16

Total merchantable oils outside of asphalt..... 37.58

From this residuum, by a regrouping of the hydro-carbons, 30 per cent. asphalt can be produced at a cost of \$13.50 per ton. These results, a part of which have been determined under my supervision, are next in importance to the actual discovery of oil in Texas, and makes Texas oil a successful competitor to Russian oil when this class of oil is preferred, as is the case in certain parts of Europe and South America.

### Oil a Revolutionizer.

In a recent interview at New York President George J. Gould of the Missouri Pacific and the Texas & Pacific railway systems, regarding general prosperous conditions in the Southwest with which he had been much impressed, said:

"We are contemplating a line from Arkansas City south to Lake Providence, in Louisiana. The Texas & Pacific is to be rebuilt and extended, so that it will form a through line along the west bank of the Mississippi river between New Orleans and St. Louis. The improvement will include also a rebuilding of the New Orleans & Northwestern Railroad. The discovery of oil in the Texas fields has been of great benefit to the Southern roads, and its importance is not yet fully realized. The oil is there, and it is a most wonderful deposit, probably the largest in the world. Four barrels are equal as fuel to one ton of coal. There you have it in a nutshell; fuel equal to coal at forty cents a ton. It is going to revolutionize railroading in that section. We are adopting oil as fuel on our locomotives in Southern Texas gradually, and the manufacturers are adopting it. Of course, there is a limit beyond which it cannot be transported on account of

the freight rate, but where it comes into competition with coal it drives the coal out."

### OIL NOTES.

#### Facts About Petroleum and Its Uses.

Oil experts are examining lands in Fentress county, Tennessee.

A powerful tug has been engaged to tow barges with cargoes of oil from Port Arthur to consumers on Louisiana plantations.

A committee of the Board of Trade of New Orleans is conferring with the insurance men of that city with a view to devising satisfactory regulations for the use of oil as factory fuel.

An indication of the continued growth of the demand for Texas oil for fuel purposes was the fact that recently 350 tank cars loaded with oil were waiting at Beaumont for the necessary locomotives to move them.

### COPPER AND GOLD.

#### Wealth in a North Carolina Freak of Nature.

Editor Manufacturers' Record:

A freak of nature split the earth atwain at Gold Hill, in North Carolina, and then came oozing, bubbling, rising from the depths mineral solutions carrying copper, gold, silver, sulphur, iron, with other minerals, and filled the gap so made until nature said, "it is done; this wealth is for man." Now, that took place geological epochs ago, before time was reckoned, and when man and his demand for metal was not. Early in the year 1800 he found it, since which time over \$5,000,000 in gold alone has been produced from this storehouse of mineral. During this production the copper contents were considered a detriment, and consequently thousands of tons were washed away in the anxiety to obtain gold only. In the Gold Hill mine thousands of tons are now standing exposed, with copper contents far exceeding the gold values. At the same time, every ton contains that metal associated with the copper.

The Gold Hill district comprises the Gold Hill Copper Co.'s mine, the Barnhardt, the Union Copper Co.'s mine, the Whitney, the Icehour, the Rumpel. The Southern Railway has built into these mines a side-track some two and one-half miles, so that the district is accessible to a modern degree, and coke, coal, etc., are delivered at a minimum.

Having had the management of Gold Hill for some three years, and the sampling of the Barnhardt before it filled with water, I feel competent to venture a few remarks calling attention to what is being done in this district, not that it requires any booming, but as a matter of news that will interest many, and to answer the question I am often asked in New York and elsewhere "as to what is being done at Gold Hill."

The Gold Hill mine is now owned by the Gold Hill Copper Co. The mine is well equipped with hoisting and pumping machinery, and at present the water has been lowered to the 500-foot level in the Randolph shaft, which has a depth of 750 feet. This mine was always worked for the gold value, and whenever copper ore was encountered it was avoided on account of the difficulty and cost of extract-

ing gold from it; consequently the copper-gold ores are standing ready to be extracted. This it is making ready to do on a scale commensurate with the size of the deposits.

The Union mine, belonging to the Union Copper Co., has its main shaft down nearly 500 feet. The mine has been developed by twelve different shafts, and has some 20,000 tons on dump, and many times as much exposed in the mine, which is being extracted daily and sent to the plant. This consists of a crushing, concentrating, roasting and smelting operation, where the ore is reduced to a matte containing 40 to 60 per cent. copper and some \$10 to \$50 per ton in gold and silver. This matte is then sold and shipped to refinery in New York. At present it is treating about 100 tons daily; at the same time erecting an additional plant in order to increase the output, which will no doubt put the mine on a dividend-paying basis. The ore here is similar to that of Gold Hill, its neighbor, and is a continuation of the same family of veins. It is an iron and copper sulphuret carrying gold and silver, and occasionally small amounts of lead and zinc in the form of galena and blend. In parts of the mine heavy deposits of manganese ore carry as high as 1000 ounces of silver to the ton. Aside from treatment of its own ores, it treats ores from other mines in the State on a fair basis, thereby encouraging the industry and being the means of several new developments. Previous to this time the miner with smelting ore was at a loss to handle it, in consequence of which an abandonment was the result. The Union is all activity and bustle, and has the air of a prosperous mining camp. Carl Hendrich, the well-known metallurgist, is in charge. His thorough business management has won for him the esteem of all connected. Capt. W. Murdock Wiley is purchasing agent.

About one-half mile to the west, and on a parallel vein, is located the McMacken and Icehour gold mines. These consist of a large deposit of low-grade gold ore, viz., iron pyrites, with an occasional sprinkling of copper pyrites. While these properties have produced some rich ore at times, their claim is rather for quantity than quality. Development here has been undergone in the most systematic manner, until today it is claimed they have fully 1,000,000 tons of gold ore in sight. The main shaft is down over 500 feet, from which level the richest ore has been extracted. The improvement here in depth has been positive. The mine is equipped with up-to-date hoisting plants, compressors, air drills, electric lights and 10-stamp mill, with concentrating and chlorination plant. This is kept in operation day and night on ore from new ground being opened up, so that the company knows from actual working result the value of each level. It is its purpose to erect a plant having a capacity of 500 tons daily on its river power property on the Yadkin river and transport the ore over its own railroad.

Col. E. B. C. Hambley is the energetic head of the enterprise, and to him is due the credit of having this great gold-mining equipment. This Gold Hill district is now producing copper, gold and silver, and from ore in sight, will continue to do so for many a year. Pluck, energy and capital have made it what it is. We all felt it was here, but it remained for the vigorous W. G. Newman to uncover it. His name will always be associated with Gold Hill as it great benefactor. The mines are here, and what we require is more Newmans and Hambleys, with the developing power.

RICHARD EAMES, JR.  
Room 1010, Empire Building, New York.

### FAYETTEVILLE'S OUTLOOK.

#### Industries Under Way and Others Likely to Come.

[Special Cor. Manufacturers' Record.]

Fayetteville, N. C., December 21.

The contemplated railroad, intended to run between the winter town of Southern Pines, N. C., and this place, making connections with the Seaboard Air Line, has a charter, has been surveyed and several miles graded, with perhaps some cross-ties provided. That it will be completed during the coming year I think is pretty well assured. The line will be perhaps forty miles in length, and will run along a ridge through the piney belt, requiring little, if any, bridging, and not much grading. The country to be traversed is well adapted to peach and grape culture, and for many kinds of early trucking. The soil is light and sandy, underlaid with clay sufficiently near the surface to retain any enrichment applied. It has been practically demonstrated that this kind of soil and our climate are just what are needed in the culture of the products referred to, and our present facilities are such as to have these articles gathered one afternoon and appear on the breakfast tables of Washington and Baltimore the next morning.

A syndicate of Northern capitalists, whose names are for the present withheld, are ready to advance the funds to complete this road. Should it be completed within the next year, 75 per cent. of the freight now brought to and sent from this place is pledged to go to this road.

Fayetteville being at the head of navigation on the Cape Fear river, is a most desirable point for railway terminals. When the contemplated improvements on our river are completed, by which we will have a minimum depth of water the year round from six to eight feet, Fayetteville will rapidly become a manufacturing center. Already several additional mills have been located here, their owners having realized that there is a considerable profit to them in their savings in freight alone. And it is now reliably said that the splendid Hope Mills Co., already operating three large mills here, will begin at once to erect two others near this place. It is also rumored that another large silk mill will be erected here very soon, the one already here having proved very profitable, employing negro labor alone.

The Cape Fear Light & Power Co., which is under contract to supply our mills with electric-power, has had an exceptionally bad year in which to erect its plant. One freshet after another has greatly retarded this important enterprise, but as it is one of such magnitude and promises so much for our future prosperity, we can afford to be patient with the delays, which could not be anticipated or overcome entirely.

Fayetteville, owing to its many advantages, is rapidly becoming a distributing point for the wholesale trade. These things are becoming known far and near, and capitalists are much encouraged to come to so promising a point to make investments. Fayetteville, N. C., should have a \$250,000 hotel upon one of the elevated points overlooking the city on three sides. This is the half-way station between Jacksonville, Fla., and New York. Here amid the pines the thousands who make their yearly pilgrimages to the balmy South would find in such a caravansary all the rest and pleasure they were seeking as they passed, going and coming. Fayetteville, with such a hotel, would offer, with its good Southern society, places of historic interest and its pretty drives, much to attract the tourist. Then could be added quail shooting, fox



hunting, golf and horseback riding, together with a climate unsurpassed anywhere. All these attractions would keep the most expensive hotel crowded six months in the year, if not longer. What has been done at Southern Pines could be accomplished at Fayetteville, N. C.

F. R. ROSE,

Secretary Chamber of Commerce.

#### Improvements at Elkins.

[Special Cor. Manufacturers' Record.]  
Elkins, W. Va., December 19.

Kistler, Lesh & Co. of Boston, Mass., and Lock Haven, Penn., a large and substantial tanning firm, have purchased thirty-two acres of land at Elkins, W. Va., from the Valley Improvement Co., and will erect a tannery thereon as soon as the weather will permit. They will build a superintendent's house at once. The tannery will produce union leather, and will employ about 150 men. This firm already operates several tanneries in Pennsylvania and one in North Carolina.

The Elkins Milling Co. has begun the operation of a first-class 60-barrel roller-process flour mill. The machinery for same has been ordered, and operations will begin as early as possible in the spring, employing about fifteen men.

The Elkins Brick Co. has just completed and has now in operation a modern brick plant with a capacity of 25,000 building and paving brick per day. The brick will be manufactured from shale which has been thoroughly tested. The plant will employ twenty-five men.

The Coal & Iron Railroad is nearly completed. It is being built from Elkins to Durbin, W. Va., opening up a very large territory of virgin forests, timbered mostly with hemlock and spruce. It is expected to open the railroad for traffic early in the spring. Lumbermen who have purchased timber have already begun logging.

The proposition made by Senators Davis and Elkins to donate \$30,000 and a site for the establishment of a college at Elkins, provided the Presbyterian Synod of Virginia raised a similar sum, has been accepted by the authorities of the Presbyterian Church, who have every assurance that the money can be raised. It is now expected that work on the buildings can be begun early next summer.

#### Opelika Enterprises.

In a letter to the Manufacturers' Record Mr. W. A. Andrews of Opelika, Ala., says:

"I have been a subscriber to your valuable paper for a number of years, and notice the great interest you feel in the upbuilding of the South. While Opelika is not as old nor as large as some of the progressive Southern towns, yet we feel that we have made progress, and with our advantages, will continue to improve. We are comparatively a new town, yet we have 5000 inhabitants, and are still growing.

"We have recently built an up-to-date cotton-yarn mill, and have already quite a reputation on the quality of our yarns, making only fine yarns, and finding sale for all that we can make.

"We have one of the largest chemical works here that there is in the South, making and shipping acids all over the South.

"The Standard Oil Co. makes this one of its most important shipping points for the different stations on the roads leading out from Opelika.

"We have three large wholesale grocery stores and one large hardware, crockery and housefurnishing goods establishment that do an immense wholesale business, sending their traveling men throughout Alabama and Georgia.

"We have two sash, door and blind and woodworking manufactories that do quite an extensive business, both local and to points 50 to 100 miles out of town to the different railroad stations.

"We have cotton-oil mills and a guano factory shipping their product to all sections of the country beside the local trade.

"We are on the direct line of railroad from New York to New Orleans, and the crossing of the direct route from Kansas City to Savannah—twenty-seven passenger trains daily, and having the same rates as Atlanta, Ga., Columbus, Ga., and Montgomery and Birmingham, Ala.

"All wholesale and manufacturing businesses seem to prosper here under the advantages, and we have recently organized a commercial and industrial association, and can offer superior inducements to small enterprises—cotton-yarn and weave mills, knitting mills, furniture and coffin factories, etc.—and should you know of anyone on the lookout for a location, we can offer superior advantages to the larger towns."

#### FOR ALL VESSELS TO USE.

New Orleans to Be Benefited by the Great Dry-Dock.

Secretary John D. Long of the Navy Department has written to Mr. Fred Muller, secretary of the New Orleans Maritime and Merchants' Exchange, Limited, announcing that the steel floating dry-dock may be used with certain regulations by merchant vessels. The New Orleans States regards this privilege as likely to give New Orleans an immense precedence. It says:

"It easily can be seen that this means immense precedence to New Orleans. As pointed out in the States at the time, the privilege of docking at New Orleans will save shipowners and charterers thousands of dollars annually by reason of the fact that their vessels will not have to go to Newport News or North Atlantic ports for their docking. Under the present plan, all charter parties read that vessels shall be docked 'north of Hatteras.' Now all charterers can have inserted in their parties either Hatteras or New Orleans, at option, or New Orleans exclusively. Thus the thousands of vessels of all descriptions that come to this port can take advantage of the presence of this great dry-dock and have all their scraping and repairing done here. This will mean the expenditure of thousands of dollars annually and the establishment of auxiliary shipping industries at New Orleans, which will place the port abreast of the greatest in the world.

"Some time since President Spindler of the Mexican-American Steamship Co. spoke of the advantages which would accrue from the privilege now granted, and General Agent A. L. Roby of the same line, in another interview, said that it would save the company some \$2000 each time it had need for docking one of its four ships that run into Mexican waters. He calculated that it would save some fourteen days' time, which, with the expense of running to the Atlantic seaboard and the loss of business for that time, aggregated a direct loss to the company which can now be wholly eliminated. What is true in the case of the Mexican-American Steamship Co. is true of all others that send ships to this port, and when the news shall have been sent broadcast and into the various shipping ports of the world, the increase of bottoms coming to New Orleans will reach proportions never before known in its history. With the splendid harbor that the river affords, its perfect safety, its advantage of fresh water in assisting the cleaning of

bottoms, together with the privilege now extended to all vessels to enter the great government dock, will serve a purpose the results of which will be wide-reaching in their effect and at a single bound place this city on a par with the greatest naval docking ports of the world, and far ahead of the majority of them."

#### For Training Abroad.

Mr. Robert L. Lamb writes to the Manufacturers' Record as follows: "It will be necessary, in carrying out plans for the technical education of the poor white boys of the South, to send them to schools and colleges, and not only for preliminary training, but in order to weigh, measure, test and grade them as to strength, intellect, morality, etc. Having selected good material, send them, some to the North, South, East and West in our own country, and a goodly number to each of the principal countries of the world, so that each in his particular line may learn the technical and practical workings of the leading industries of every line. When these young men have acquired this knowledge, many of them will find a practical use for it. It is wanted right here in their own land, and that will be a power in the land, an honor to their benefactors and a blessing to their country."

#### South Carolina Industries.

United States Senator McLaurin has received from the census bureau figures regarding manufactures in South Carolina which show that between 1890 and 1900 the number of establishments increased from 2382 to 3762, or 57.9 per cent.; the capital from \$29,276,261 to \$67,356,465, or 130.1 per cent.; the number of wage-earners from 22,784 to 48,135, or 111.6 per cent.; the amount of wages from \$5,474,739, to \$9,455,900, or 72.7 per cent.; miscellaneous expenses from \$1,792,386 to \$3,111,587, or 73.6 per cent.; the cost of material used from \$18,873,666 to \$34,027,795, or 80.3 per cent., and the value of products from \$31,926,681 to \$58,748,731, or 84 per cent.

#### Mississippi River Traffic.

The bureau of statistics has been making inquiries as to the possibilities of carrying grain and other freight from the upper Mississippi river to New Orleans. It has received a letter from the president of the Board of Trade of New Orleans, which states that if a suitable channel is maintained above St. Louis a barge could be towed to New Orleans carrying 90,000 bushels of grain. He believes that the city would become the terminus of a far more extensive river traffic than at present if the government maintained a depth of water in the river, which could easily be secured by dredging.

#### Virginia Shipbuilding.

The battleship Missouri is to be launched next Saturday at the yards of the Newport News Shipbuilding & Dry-Dock Co. In view of that event the Daily Press of Newport News has published a comprehensive review of the development of shipbuilding at that place and at Richmond, which shows that during the year four war vessels, with a total displacement of 13,799 tons, have been launched from Virginia yards, and merchant vessels with a tonnage aggregating 42,380 tons.

The Chesapeake Steamship Co. announces that steamers of the York River Line will leave Baltimore hereafter on Tuesday, Thursday and Saturday at 5 o'clock, and West Point, Va., on Monday, Wednesday and Saturday at 5.50 o'clock P. M. At West Point direct connection is made for Richmond by rail.

#### Literary Notes.

"Plant Life in Alabama" is the title of a valuable publication of the geological survey of Alabama. It is an account of the distribution, modes of association and adaptations of the flora of Alabama, together with a systematic catalogue of the plants growing in the State. It was prepared by the late Dr. Charles Mohr, and embodies the result of nearly forty years of sojourn and wanderings in the State, during which time all parts were visited and extensive calculations made. It is the first part of a plan of the geological survey to publish a comprehensive report of the botanical resources of Alabama. It is far more than a bare list of the native plants of the State, inasmuch as the plants are presented according to the most modern system of classification, with the synonymy of each species most carefully worked out, with the type locality and full notes of its occurrence in Alabama. Only those who have had similar work to do can appreciate the amount of learning and labor involved in the preparation of this volume, and there is general regret that the death of Dr. Mohr prevented his completion of the second part of his report on the economic botany of the State, in which he proposed to classify and describe all of its plants useful for timber, for ornament, for forage and food purposes, for medicinal use, etc., as well as those which were undesirable or dangerous.

Current History for December offers a world-wide survey of events during October. The department on international affairs occupies nearly twenty pages, in which are treated the situation in China, the Boer war and the European situation. A similar concise and clear treatment is given to affairs in America, Europe, Asia and Africa. In the department devoted to science, religion and miscellaneous topics some of the subtitles are "Santos-Dumont," "The New Psychology," "Criminal Anthropology," "Notable Religious Conventions," "Yale's Bi-centennial," "Monetary," "Notable Disasters," etc. Among the numerous illustrations are portraits of Hon. Seth Low (frontispiece), Prince Ferdinand of Bulgaria, Sir Julian Pauncefote, President Hadley of Yale, Booker T. Washington, Admiral Benham, President Castro of Venezuela, Professor Virchow and M. Santos-Dumont. There are half-tone views of the national palace at Mexico, in which the Pan-American Congress is being held, and of the old and new library buildings at Yale University.

Cassier's Magazine of illustrated engineering for January contains the following articles: "Niagara Falls Power," by Philip P. Barton; "A Smokeless London," by W. C. Popplewell; "Wireless Telegraphy," by William Maver, Jr.; "Elevators for Tall Office Buildings," by Reginald P. Bolton; "The Future of Electricity Supply," by W. S. Barstow; "The Electric Incandescent Lamp," by Bernard V. Swenson; "Hoisting Machinery," by Joseph Horner; "Engineers in the United States Navy," by Admiral George W. Melville, U. S. N.

The trade edition of the Courier-Informant of Bartow, Fla., is a publication of thirty-two pages which combines in a splendid exhibition of home-made typography a mass of information of great value to the home-seeker. It dwells particularly upon the revolution which has been accomplished in recent years in the industries and agricultural interests of county. Formerly cattle and oranges were about the only sources of revenue. Now, while occupying a prominent place, the cattle in the county number 54,470

and the number of boxes of oranges shipped a year ago 75,000, among other products, such as 2500 crates of grape fruit, 250,000 crates of vegetables, 150,000 crates of strawberries, with phosphate interests representing \$1,000,000 and the turpentine interests representing \$500,000. In addition, the growing of pineapples, cassava, velvet beans, corn and sweet potatoes is increasing. Fruit is raised in the county all the year round. Bartow, the county-seat, with a population of 3000 persons, has increased in sixteen years the assessed value of its property from \$100,000 to \$1,000,000.

#### GENERAL NOTES.

##### Brief Mention of Various Matters of Current Interest.

During 1901 New Orleans imported 712,615 bags of Brazilian coffee.

Ground was broken on last Friday for the World's Fair of 1903 at St. Louis.

The assessed value of real estate of Columbus, Ga., in 1901 was \$10,565,363, an increase over 1900 of \$110,567.

The building permits issued at Chattanooga during the past year represented more than half a million dollars.

Large numbers of prospectors for lead and zinc have been operating recently in Stone, Baxter and Marion counties, Ark.

It is estimated that the increase in the value of assessable property in South Carolina in 1901 over 1900 will amount to \$11,970,212.

The authorities of Portsmouth and of Norfolk, Va., as well as those of Richmond, are discussing plans for the annexation to their respective municipalities of outlying territory.

The receipts of the State government of North Carolina for the fiscal year ended November 30 were \$1,602,676.48, and the balance in the treasury on that date was \$18,263.02.

The city of Memphis is the title which has been selected for the vessel being built by the Delaware River Shipbuilding & Engine Co. of Chester, Pa. It is to be finished by April 1, and will be placed in service on the route between Savannah and New York.

The N. K. Fairbank Co. of St. Louis, Mo., has completed at New Orleans its lard factory, employing 100 persons, with output of 500 tierces of lard daily. The plant is equipped with modern machinery throughout, having its own electric-light plant, ice plant, etc.

The rail mill at the steel plant of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., is nearing completion, and is expected to be in operation in a few weeks. Its exact capacity has not heretofore been announced, but it will be for several thousand tons of rails daily.

L. B. Musgrove, general manager of the Corona Coal & Iron Co., has announced at Birmingham that 500,000 tons of coal, the greater part of it for the New Orleans market, will be shipped from Walker county, Alabama, down the Mississippi river from Greenville during 1902.

The board of expert engineers employed by the city commissioners of Galveston to formulate a plan for a sea-wall and for raising the grade of the city above high-tide level expect to report by January 1. It is thought that the board is strongly inclined to recommend a plan for raising the grade of the city as a protection. This plan, carried out, would be an immense undertaking.

## RAILROADS.

[A complete record of all new railroad building in the South will be found in the Construction Department.]

### Gulf & Ship Island.

In a recent issue the Manufacturers' Record published extracts from a letter from the vice-president of the Gulf & Ship Island Railroad relative to improvements contemplated to the line and terminals. It is officially announced that arrangements have been made with the banking firm of Fisk & Robinson of New York to refund the present bonded debt of the road, also to provide funds for the completion of terminals and other improvements. They include the extension of the pier at Gulfport, Miss.; two new bridges, also the relaying of a portion of the line with 80-pound rails. Four additional locomotives, 400 flat cars and 100 box cars will be added to the rolling stock. The ship channel is to be dredged to a minimum depth of twenty feet and a width of 300 feet. It will be six miles in length, extending from the Gulfport pier to deep water. The report of the company for the year ending June 30 last shows that the proposed plans are warranted by the increase of traffic. The gross earnings amounted to \$1,036,000 on 250 miles of line, compared with \$456,000 on 154 miles during the previous year. The net earnings amounted to \$233,000, compared with \$100,000 during the previous year.

### Palatial Southern Train Service.

Year by year the passenger-train service on lines connecting the North with Southern winter resorts is improved, until now trains are in operation which it would seem could scarcely be improved upon. In making provision for the winter tourist the Southern Railway Co., as might be expected, neglects nothing which will add to the comfort and elegance of its service. It has decided to operate the Chicago and Florida Special this year between Chicago and St. Augustine, Fla. This train in the past has undoubtedly been a great advertisement for Southern winter resorts, as it has provided such facilities for reaching the Gulf and South Atlantic coasts. By it the tourist can go without change of cars from Chicago to Cincinnati, Jacksonville and St. Augustine, while the train runs "solid" between Cincinnati and St. Augustine. It is composed of the finest cars turned out of the Pullman shops, including library, observatory, club cars and dining cars, besides the sleepers. The schedule is such that passengers leaving Chicago at 1 o'clock in the afternoon reach St. Augustine at 9:30 o'clock the next evening.

### Extend to Corsicana.

Although the Orange & Northwestern Railroad Co. has just completed its line between Orange and Buna, Texas, the directors of the company have decided upon a further extension, which will complete the road to Corsicana, and surveys are to be made immediately with this end in view. The distance will be 200 miles, the extension being through portions of the Texas oil field and pines. At Corsicana a junction will be formed with the St. Louis Southwestern system. The Orange & Northwestern has been built by local capitalists, John W. Maxey of Houston being chief engineer.

### Aggregate Railroad Earnings.

Preliminary reports made public by the interstate commerce commission for the year ending June 30, 1901, show returns on 192,193 miles of line. The passenger

earnings of these railways were \$426,909,210, and the freight earnings \$1,114,740,770. The total gross earnings were \$1,578,164,205, or \$8211 per mile of line, against \$1,487,044,814 in 1900; operating expenses amounted to \$1,023,156,281, or \$5323 per mile of line, making net earnings \$555,007,924, or \$35,577,218 in excess of the fiscal year 1900. The amount of dividends declared during the year was \$121,108,637, or \$13,000,000 more than for the same roads in 1900. The surplus from operations was \$77,544,735. The complete report for the preceding year showed a surplus of \$87,657,933.

### Mobile, Jackson & Kansas City.

At the annual meeting of the stockholders of the Mobile, Jackson & Kansas City Railroad Co. the present board of directors was re-elected. In his report President Merrill of the company announced that the extension from Merrill to Hattiesburg had been graded, and tracklaying is in progress. Six passenger coaches and two baggage cars have been added to the rolling stock, while the announcement in the Manufacturers' Record that an extension north would be built was confirmed. A number of industries are to be located at various points along the line, including two saw-mills and a sash and blind factory.

### Line to New Orleans.

In connection with the New Orleans & Mississippi Midland Railroad, which has recently been described in the Manufacturers' Record, a report is current that if built, it will be in the interest of the St. Louis & San Francisco system. The Birmingham division of the St. Louis & San Francisco extends to New Albany, Miss., and it is stated the company is negotiating to secure a line extending from New Albany to Pontotoc, Miss., the proposed northern terminus of the Midland Railroad. If the plans are carried out, it would give the St. Louis & San Francisco an outlet on tidewater at New Orleans.

### More Rolling Stock.

The orders for equipment, already announced in the Manufacturers' Record, to be given by the Baltimore & Ohio Railroad Co. include forty-eight locomotives to the American Locomotive Works, two switching engines to the Baldwin Locomotive Works, twenty-six passenger cars to the Harlan & Hollingsworth Company of Wilmington, Del.; twelve baggage cars to the Pullman Company, 3000 coal cars to the Pressed Steel Car Co. of Pittsburgh, and 2000 box and flat cars to the American Car & Foundry Co.

### Rails from Europe.

The latest report concerning the Kansas City, Mexico & Orient Railroad is to the effect that President A. E. Stilwell has made a contract with Belgian manufacturers to supply the necessary rails for the line in Mexico, and that they are to be delivered as soon as possible. It is announced that the first portion to be opened for operation in the United States is between Anthony, Kans., and a point in Oklahoma. This section is now graded.

### Union Depot at Mobile.

President F. B. Merrill of the Mobile, Jackson & Kansas City Railroad Co. has made a proposition to the city authorities of Mobile with a view to constructing an elaborate passenger depot to be used by all the lines entering Mobile. Mr. Merrill states that the company he represents is ready to build such a structure as soon as right of way and a suitable site can be obtained, with the aid of the city authorities.

### Washington to Gettysburg.

Mr. Jas. B. Colegrove, president of the Washington, Westminster & Gettysburg Railroad Co., states that it is expected to begin grading this line in a few days. It will be seventy-five miles in length, extending from Rockville to Gettysburg by way of Mount Airy, Westminster and Littlestown. Mr. Colegrove states that the Baltimore & Ohio Railroad will be used into Washington from Rockville.

### Railroad Notes.

Northern parties are reported to be negotiating to secure control of the street-railway system in Montgomery, Ala.

The Baltimore & Ohio Railroad Co. has recently completed extensive improvements upon the line between Grafton and Belington, W. Va. They include seventeen bridges and considerable grading work.

The electric railroad between Dallas and Fort Worth, Texas, is practically completed, and it is expected will be in operation by January 1. The company has secured the necessary rolling stock for the line.

According to Mr. L. S. Robertson, an official of the Kansas City Southern Railway Co., this corporation is making tests of the use of oil with the view to substituting it for coal for locomotive fuel. The oil is being obtained from the Beaumont district.

The Choctaw, Oklahoma & Gulf Railroad Co. has decided to expend \$2,000,000 for additional locomotives and cars required by the increased traffic. An equipment trust loan has been formed to provide for the purchase of stock, the securities bearing interest at the rate of 4½ per cent.

The Savannah Electric Co., which controls the street railway of Savannah, Ga., has decided to issue \$6,000,000 in securities, and the American Loan & Trust Co. of Boston is trustee for the bonds, which will amount to \$2,500,000, bearing 5 per cent. interest. The company controls about thirty miles of line.

Mr. D. A. Belden of Aurora, Ill., has been appointed general manager of the street-railway system of Atlanta, and it is understood will probably be elected president. Mr. Belden has been general manager of the Aurora & Geneva Electric Railroad, and has a high reputation as a railroad expert in the West.

The pending legislation in Congress in favor of the location of a soldiers' home in the vicinity of Johnson City, Tenn., may encourage the construction of an electric railroad from Johnson City to Jonesboro. Congressman W. P. Brownlow of Tennessee informs the Manufacturers' Record that the project is being investigated by several promoters, and that it may be carried out during the next year.

Something practical and valuable in the way of advertising has been issued by the passenger department of the Louisville & Nashville Railroad Co. in the form of a daily memorandum book, which contains a calendar and space for memoranda for every day in the year, statistics relative to coins, population of cities, the last census and other valuable data. Incidentally a sectional map of the world and of the United States, showing the wide territory served by the Louisville & Nashville system, is included. In this map the Philippines are displayed prominently.

Of \$20,864.40 collected by the secretary of State of Mississippi during the year, \$18,373.75 were derived from fees for charters.



## FOREIGN TRADE.

This department is designed to set forth opportunities for the extension of the trade abroad of American manufacturers, and to record facts about the rapidly-developing commerce of the South.

### FOREIGN MARKET HINTS.

#### Suggestions by Alert Consuls of the United States.

Representatives in foreign countries of the United States Department of State continue to suggest openings for the extension of foreign trade of American manufacturers. Consul Frank W. Mahin at Reichenberg, Bohemia, reports that nearly everything made in the United States could be sold in his district, although the greatest trade is for spinning and weaving machinery. He says that nothing can be done with circulars and trade periodicals, especially when printed in English, but that resident agents able to speak German and constantly in touch with the factories are needed. He adds that an American mower, the first and only American machine in the district, has appeared, but that no reaper has yet invaded a grain field in that section, the sickle still holding sway in the harvesting of cereals, and threshing still being done by women with the flail.

Consul Ravndel at Beirut, Syria, reports that the manager of a factory established at Beirut eighteen months ago to can Syrian fruits for export is desirous of getting tinplates from the United States, and American manufacturers of tinplate are requested to address Messrs. Ch. Gailhae, Rosalt & Co., Societe Francaise de Confiserie, Beirut, Syria.

The Compagnie des Mines de la Grande Combe, 17 Rue Haxo, Marseilles, has informed Consul-General Robert P. Skinner there that it desires to receive bids for about 5000 tons of coal-tar pitch for immediate delivery at the port of Marseilles or Cette. This company uses about 30,000 tons annually, and if satisfactory arrangements can be made the contracts will be placed in the United States.

Consul Monaghan of Chemnitz, Germany, referring to successful efforts of German traders to win South American markets, expresses the belief that American manufacturers should be in a position to compete for the cotton-woolen market of South America, and thinks it strange that German manufacturers can buy American cotton in Liverpool and elsewhere, pay enormous freights, bring it to Chemnitz and reship it to Chili.

Perhaps a clue to the secret of this is given in an interesting report made by Consul Peter Strickland at Gorce-Dakar on the need of direct steamship service to Africa. He discusses the custom of making American shipments in foreign bottoms, and says: "If our competitors who now do our freighting manage it so as to keep our manufactures from the best, because the newest markets, while they export our excess of food products in order to feed their competing operatives cheaply, the result in time will not be gratifying to our pride." He reviews the disappearance of American vessels from the African trade, suggests lines of steamers between the United States with the west coast and east coast of Africa, and says:

"The steamers of both these lines should be well equipped for mails and passengers, and subsidized to an extent which should lead to their immediate establishment and serve to maintain them against the competition of rival foreign lines, as nothing is more certain than that a determined effort would immediately be made to run them off."

"But there is no question that without help from the government no line of steamers under the American flag could exist on this coast. Since our necessary expenses would be greater, one could hardly exist if foreign steamers were not subsidized, and all the odds are allowed to be against our merchants and ship-owners. And this brings us again to the question whether it is safe and best to make our own coast line our counter for our manufactured goods, or whether it is not vastly better to imitate our rivals in seeking out the consumer wherever he may be found, with all the means and appliances for giving him satisfaction wholly under our own control. The facilities will cost us something more than our competitors have to pay for theirs, but it is far better so than that we should trust customers 4000 miles away to send us orders for goods on the strength of circulars printed in a language they do not understand."

### Port Arthur and Europe.

A dispatch from Port Arthur, Texas, is to the effect that the Netherland Lloyds Steamship Co. of Rotterdam has under consideration a line of steamships between Port Arthur and Europe in connection with the Kansas City Southern Railroad. The stockholders of the steamship company are also interested in the railroad, and it is believed that the traffic of the latter will be increased as a result of such an arrangement. F. Horstmann, a director of the steamship company, has recently made a tour of the Southwest to investigate the opportunities for the line.

### Notes.

Between July 1 and December 14 the tonnage of foreign vessels entered at Galveston was 359,572, an increase of 44,421 over the same period in 1900. There was a similar increase in the tonnage of coastwise vessels entered at that port.

In a letter to the Manufacturers' Record Chotay Lall of Agra, India, writes for information about American cigar and cigarette-making machinery, knitting machinery and machines for making knit goods, seamless hosiery and comforters.

Mr. F. Horstman of Rotterdam, one of the directors of the Netherland Lloyds line of steamers, has been visiting the various ports of the country, and announces that one of seven vessels being built for the line will be put in the New Orleans service.

The steamship Shawmut, referred to in the last issue of the Manufacturers' Record as under construction at the plant of the Maryland Steel Co. at Sparrow's Point, has been successfully launched, and is to be completed as soon as possible. It is expected the vessel will be in commission about April 1.

In a letter to the Manufacturers' Record Mr. S. Worthen of Estatee, Mitchell county, North Carolina, writes that the railroad connecting Mitchell county with the outside world is being pushed rapidly, 900 men working on it in that county alone. The mica business of the county is employing more than the usual number of hands, while the emerald mine is being developed by Thomas English, the enterprising manager living at Spruce Pine. Cutting and hauling lumber gives employment to a large number of hands.

The Texarkana Development Co. has been organized to prospect for oil, gas, asphaltum, coal and other minerals, and is now boring for oil at Texarkana, Ark. The officers are Messrs. F. W. Offenhauer, president; R. J. O'Dwyer, vice-president; G. A. Hays, secretary; E. K. Smith, treasurer, and R. A. Munson, manager.

## TEXTILES.

[A complete record of new textile enterprises in the South will be found in the Construction Department.]

Correspondence relating to textile matters, especially to the cotton-mill interests of the South, and items of news about new mills or enlargements, special contracts for goods, market conditions, etc., are invited by the Manufacturers' Record. We shall be glad to have such matter at all times, and also to have any general discussion relating to cotton matters.

### Williamston (S. C.) Mills.

The directors of the Williamston (S. C.) Mills met during the week and elected officers for the ensuing year. They are: President and treasurer, James P. Gossett; vice-president, Ellison A. Smyth of Pelzer, S. C.; secretary, G. Lang Anderson, and directors, Messrs. Gossett, Smyth and Anderson, G. H. Mahon, B. C. Martin and R. P. Ransom of Greenville, S. C.

This company, organized a year ago, has erected an 87x240-foot building to accommodate 10,000 spindles and 300 looms, although but half of this equipment will be installed at the start; this half has been ordered, and is to be delivered and installed soon. Such machinery as boilers, engines, pumps, etc., is already on the ground.

The site of the mill and operatives' village comprises a 100-acre tract, well drained and abundantly watered. The company is capitalized at \$200,000, and is expending about half that amount for the initial plant. Print cloth sixty-four inches square will be the product. The plant has been designed and built under the direction of Stewart W. Cramer of Charlotte, N. C.

### Mills of Mexico.

A short time ago there was a report that Mexico was preparing to extend its trade in cotton goods to the Latin-American countries. That this report was somewhat premature was indicated by a statement of the Mexican minister of finance that "inasmuch as the increase of consumption is necessarily gradual and slow and the exportation of cotton goods problematical, no other solution of the difficulty can be looked for save a prolonged and perhaps permanent shutting down of certain cotton factories which, owing either to the cost of motive power, distance from the centers of consumption, antiquated character of machinery or other adverse conditions, are not in a position to compete with their rivals."

### A \$100,000 Cotton Mill.

A charter of incorporation has been granted the Voorhees Manufacturing Co. of Graham, N. C., with capital stock placed at \$100,000, for manufacturing cotton warps, yarns, etc. This company will erect, own and operate the cotton mill reported last week as to be built by Messrs. Pomeroy Bros. Construction of the plant is to be commenced at once, brick and lumber for the buildings having already been ordered. The incorporators are Messrs. Theodore Pomeroy and Jas. V. Pomeroy, Mrs. C. S. D. Pomeroy and Miss Grace D. Pomeroy.

### The Cotton Movement.

In his report for December 20 Col. Henry G. Hester, secretary of the New Orleans Cotton Exchange, shows that the amount of cotton brought into sight during 111 days of the present season was 5,984,660 bales, a decrease under the same period last year of 74,235 bales; exports were 3,158,160, an increase of 235,629 bales; takings by Northern spinners were 878,881 bales, a decrease of 107,458;

by Southern spinners 641,196 bales, an increase of 102,270.

### Textile Notes.

It is rumored that Laurens (S. C.) Cotton Mills has purchased site for the erection of another mill. The company now has 40,320 spindles and 1188 looms.

A. T. Stocks of Gadsden, Ala., is said to contemplate the erection of a knitting mill, and he has asked for information and prices on knitting-mill machinery.

Tavora Cotton Mills of Yorkville, S. C., has purchased about twenty-four acres of land near its plant in order to provide better railroad facilities and obtain a supply of water.

The Southern Manufacturing & Mill Supply Co. of Gaffney, S. C., has completed its plant, and will manufacture roving cans, mill boxes, baskets, trucks, etc., for use in textile factories.

Rowe Knitting Co. of Huntsville, Ala., has let contract to G. A. Plummer for the erection of fifty operatives' cottages. The company manufactures fleece-lined underwear, and is capitalized at \$200,000.

Social Circle (Ga.) Cotton Mills' buildings are completed, and the machinery is commencing to arrive. The equipment will be 5000 spindles for manufacturing Bedford cords, diapering, etc., and there is space for doubling the spindles.

Pennant Knitting Co. of Philadelphia, Pa., previously reported as removing its plant to Shepherdstown, W. Va., now has eighty-eight knitting machines operating on the production of cotton ribbed seamless hosiery for boys and girls.

Alabama Mills of Sylacauga, Ala., previously organized with capital stock of \$50,000, has completed installation of equipment, and now has fifty knitting machines operating on the production of cotton hosiery. J. E. Pearson is company's president.

Eagle & Phenix Mills of Columbus, Ga., has ordered another 100 looms of modern pattern to replace the same number of old looms in the plant. The remodeling of the company's water-power plant is proceeding steadily, and will soon be completed.

Elizabeth Hosiery Mills of Lafayette, Ga., previously organized with a capital stock of \$60,000, has completed its plant, and now has forty knitting machines operating on the production of women's seamless black cotton hosiery. A. R. Steele is president.

Lancaster (S. C.) Cotton Mills has about completed the buildings for its No. 2 mill, that is to have 50,000 spindles and 1200 looms. This addition is four stories high, 127x382 feet. The company's enlargement will about double its investment from \$500,000 to \$1,000,000.

Cannon Manufacturing Co. of Concord, N. C., has completed the building that it has been erecting for a bleachery, and the equipment of machinery is now being installed. Its cotton mill operates 23,100 spindles and 850 looms, the product of which will be treated in the bleachery.

Messrs. Ladshaw & Ladshaw of Spartanburg, S. C., have completed plans and let contract for the work of remodeling the power plant of Globe Cotton Mills at Augusta, Ga. New machinery will include two 42-inch horizontal water-wheels to operate under an 11-foot head of water.

J. W. Hanes of Winston, N. C., was reported some months ago as to establish a knitting mill. This plant has now been completed, and is operating under the title of the Shamrock Knitting Mills, 100 knitting machines being in operation on the production of cotton hosiery. The machinery is that which was formerly operated at Wayne, Pa., as the Radnor

Hosiery Mills. J. F. Bard is interested with Mr. Hanes.

Limestone Hosiery Mills of Athens, Ala., has completed its plant and commenced production, its daily output being 200 dozen pairs of children's and misses' hosiery. Fifty operatives are employed. About \$15,000 is the investment in machinery and building, the latter being a two-story brick, 30x60 feet in size. P. W. Hendricks is manager.

The stockholders of the Dallas Manufacturing Co. of Huntsville, Ala., held their annual meeting during the week and authorized an increase of capitalization from \$1,000,000 to \$1,400,000. The completion of No. 2 mill with 25,000 spindles was announced, and it is to be operated soon. T. B. Dallas of Nashville, Tenn., was re-elected general manager.

W. T. Weaver Power Co. of Asheville, N. C., reported recently, has let contract to C. R. Willard for construction of hydraulic canal and dam to develop its water-power property. This development is expected to produce 2000 horse-power, increased by two extra wheels to 3500 horse-power when supplemented by 30 per cent. of steam, to be used three months in the year. A cotton mill and bleachery is contemplated in connection with this development.

#### Cottonseed-Oil Notes.

It is stated that the cotton-oil mills in Mississippi have run the price of seed up to \$14 per ton, and it is expected that before the close of the season seed will reach \$17. Farmers are said to be holding crop for higher prices.

The number of oil mills chartered in the State of Mississippi during the past two years was twenty, and in previous years twenty-four. These mills reported are among the most important concerns incorporated, selected for the sake of comparison.

The State of Mississippi has disposed of the remaining portion of its cottonseed crop grown by the convicts, the last sale being that of 500 tons, at \$16 per ton. The entire crop of cottonseed this year is about 1200 tons, and the revenue derived is about \$18,000.

Exporters' prices for cottonseed products at Galveston last week ruled as follows: Prime crude oil, loose, f. o. b. Texas mills, 33½ to 34 cents; prime cottonseed cake f. o. b. Galveston, \$25.50, and prime cottonseed meal, \$24.75 per short ton; linters f. o. b., compressed, Galveston, choice, 3½ cents; A, 3 cents, and B, 2½ cents. Shipments from Galveston since September 1 are 27,197 barrels of oil, 445,452 bags of cake and 1,465,965 bags of meal.

The following are the official quotations on cottonseed and cottonseed products as posted at the Cotton Exchange at New Orleans on the 23d inst.: Prime refined oil in barrels, 39 cents per gallon; off refined oil in barrels, 38 cents per gallon; prime crude oil, loose, 34½ cents per gallon; off do., nominal per gallon; prime cottonseed cake, \$29.25 per ton of 2240 pounds; off do., nominal; prime cottonseed meal, \$29 per ton of 2240 pounds; off do., nominal; soap stock, loose, 1.12½ cents per pound; linters, per pound, choice, nominal; A, 3¼ cents; B, 2½ cents; C, 2¼ cents; cottonseed in sacks delivered in New Orleans, \$17.50 per ton of 2000 pounds; in bulk delivered in New Orleans, \$16.50 per ton of 2000 pounds.

During the first six months of the present fiscal year permits were granted at Tampa, Fla., for ninety-two new buildings representing an investment of \$59,159.50 and for repairs representing \$35,245.75.

## LUMBER.

[A complete record of new mills and building operations in the South will be found in the Construction Department.]

### LUMBER MARKET REVIEWS.

#### Baltimore.

Office Manufacturers' Record,  
Baltimore, Md., December 24.

The occurrence of the holidays is likely to restrict business in local circles for ten days or a fortnight. The usual stock-taking season is now about to commence, and during the past week the volume of trade has shown no expansion of any moment. Trade, however, is unusually good for this period of the season, and the result of the last half of 1901 is said to be very satisfactory as to volume of business and tone of the market generally. North Carolina pine still continues to show very encouraging features, and values are firm and hardening. Advances from milling sections in Virginia and Eastern Carolina are favorable; stocks have been kept down below the normal, and the demand is sharp from all the usual sources in the North and East, while there is a strong inquiry from the Middle States. Georgia pine is very steady, with a fair inquiry, and receipts ample for all requirements. White pine is firm, with an active demand, and values higher for desirable grades. Cypress, hemlock and spruce are all very steady. The movement in hardwoods is fairly active, and all along the list of values there is a much steadier tone. The demand for oak and other woods is improving, and woodworking concerns generally are adding to their supply. The foreign export trade is quiet, and very little new business will accumulate until after the new year.

#### Charleston.

[From our own Correspondent.]  
Charleston, S. C., December 23.

The movement in lumber circles in this section during the past fortnight has been fairly active, and the market generally steady for all grades of desirable material. There has been a strong inquiry from Northern centers, but adverse winds have delayed arrivals. The shipment of lumber from this port since September 1 aggregates 18,160,000 feet, against 18,577,833 feet last year. The market at Georgetown is active, and both cypress and yellow pine are in good demand, with mills all operating at their full capacity. Receipts of logs are fair, and stocks at the moment are sufficient for all milling purposes. The Atlantic Coast Lumber Co. last week executed a mortgage to the Colonial Trust Co. of Boston for \$2,000,000 on its properties in this county. The company has been doing an immense business, and the improvements in its plant and timber acquisitions make it possible for an unusual volume of business in the future. Shipments of lumber from Georgetown during the present month are reported larger than November. Lumber freights continue steady, with a moderate offering of handy-sized tonnage.

#### Savannah.

[From our own Correspondent.]  
Savannah, Ga., December 23.

The approach of the holiday season will cause some interruption in the saw-mill section of Southern Georgia. Nearly all the mills in this section will close down during the holidays, and for ten days at least very little sawing will be done. The market continues quiet, but very steady, and there is a large stock of lumber here awaiting shipment. The Northwest Steamship Co.'s steamer arrived on the 19th inst., and is taking on part cargo here, after which she will proceed to Fer-

nandina to finish loading. It is expected she will take out over 1,000,000 feet of lumber. A number of vessels to load lumber are overdue, on account of unfavorable weather on the coast, and with favorable winds a number of arrivals may be expected, so that early January will witness some heavy shipments of lumber. The list of values for all desirable lumber continues unchanged; minimum easy-sized yard stock, \$14.50 to \$15; car sills, \$15 to \$15.50; ship stock, \$23; sawn ties, \$11.50 per M feet; hewn ties (7x9x8½), 38 cents each. Lumber freights are active; to Baltimore \$4.75, to Philadelphia \$5.25, to New York \$6, and eastward \$6.50; steamer freights to Baltimore \$5 to \$5.50, to New York \$6.75 per M, to dock lightered \$7.50, to Boston to dock \$8.75.

#### Brunswick.

[From our own Correspondent.]  
Brunswick, Ga., December 23.

Nowhere perhaps in Southern Georgia is the situation in all avenues of the lumber trade more flattering than at this port. Business men of this city who are largely engaged in the lumber industry, both in milling and in the export line, are greatly encouraged by the present outlook. The foreign lumber and crosstie trade, which, before the Spanish-American troubles, were considerable factors in the port's business, are again reviving, and the demand for lumber from foreign sources is quite pronounced at the moment. Reports from the interior are to the effect that at all milling points there is remarkable activity, and orders are numerous. At St. Simons the mills are turning out lumber in great quantities, and it is shipped soon after leaving the saw. There is also a good local demand for material, and thousands of feet are going into consumption for building purposes. The growth of this city is quite encouraging, and the establishment of a new sash, door and blind factory, now in course of erection, will be a great convenience to builders and others. Foreign and domestic freights are very steady, with charters at \$10.50 and port charges to Cape Verde Islands, and \$5 for lumber to New York. The crosstie business is heavy; last rates for freight were at 17 cents for switch ties to New York.

#### Mobile.

[From our own Correspondent.]  
Mobile, Ala., December 23.

An unusual volume of business was reported last week in the lumber and timber market of this port, and shipments were heavy. The timber market continues to rule firm at 15 cents per cubic foot for 30 cubic feet average and up, with sales reported of 20 cubic feet average at 14½ cents per cubic foot. Hewn timber is firm at 13½ to 15 cents per cubic foot; hewn oak, 15 to 18 cents per cubic foot, and hewn poplar 13½ to 14 cents. Shipments during the past week were 92,572 cubic feet of sawn timber and 35,234 cubic feet of hewn timber to United Kingdom and Continent. Receipts of logs are light, and prices are above manufacturers' figures, leaving little or no margin of profit on the product. There is a good demand, however, for all the receipts, and values range from \$7.50 to \$9 per thousand, with sales at the inside figures. The lumber market is very active, and mills here and at Moss Point, Miss., as well as all adjacent milling sections, are crowded with orders. The market continues to rule firm for desirable material. The shipments of lumber through Mobile last week aggregated nearly 4,000,000 feet, of which over 1,500,000 went to South America, 1,000,000 feet to Cuban ports and the balance to Central America, United Kingdom and Continent. The total shipments of lumber since September 1 aggregate 25,204,530 feet,

against 29,000,651 feet last year. Coastwise freights continue about steady, while ocean freights are unchanged. The charters reported last week were the bark Inez Eliza, 1496 tons, from the Gulf to River Platte with lumber on private terms; schooner Sedgwick, 473 tons, from the Gulf to New York with lumber at \$6.50, option Boston at \$7; Italian ship Corona, 1152 tons, from the Gulf to Buenos Ayres with lumber on private terms; bark Glannina, 614 tons, from Pensacola to Rosario at \$12.50, and British schooner La Plata, 350 tons, from Moss Point to Havana with lumber at \$6.

#### Beaumont.

[From our own Correspondent.]  
Beaumont, Texas, December 20.

The lumber conditions are practically the same as at last report. The movement of lumber is greatly hampered by the car shortage, and at this writing there does not appear to be any relief in sight prior to January 15. Every other commodity is given preference over lumber, so of course the lumber manufacturer has to wait until the cotton, sugar and rice crops are harvested before he can expect any cars to amount to anything. Aside from the car-shortage feature, however, there is a very good business in lumber. The Texas dealers are ordering very freely, and are clamoring for stock. Many of them are writing in and asking that all their orders be rushed, and adding the statement that they are in need of fully as much more lumber. Enquiries are coming in by the bushel as to whether prompt shipment can be made or not. The farmers of Texas have been turning loose their cotton quite freely, and the consequence has been a great stimulus to the lumber trade. During the entire year the most of the lumber trade in Texas has come from the city building trade, of which there has been a great deal. Probably in no past year of Texas' history has there been as much building done in the cities and towns as during 1901. This, of course, is quite largely the result of the very large cotton crop of last year and the very good prices which were secured therefor. But during the past two months the dealers have found quite a lot of trade among the country buyers. This is what is making trade so good as it is at the present time. The farmer wants lumber, and wants it badly, and, on account of the short-sighted policy of the dealers in not carrying a sufficient amount of stock on hand, they have not been able to get their lumber promptly. The Western trade is in about the same shape as it has been in for some time past. There are quite a fair number of enquiries coming to hand, but the prices at which they desire to buy in Kansas and Nebraska prevent much business being transacted. The mills that cater to this trade have much better stocks, on the whole, than have the Texas and Louisiana firms, which accounts for the ability of the dealer in the section mentioned to buy lumber cheaper than in Texas. The retail lumber trade with Southern Louisiana is booming. The rice crops have been bounteous in that region, as have also the sugar-cane and cotton crops, and the returns from all these crops are very good. Of course, the finer grades are bought in cypress, as the cypress mills are right in that region, but the commoner grades of lumber are bought largely in Texas of the yellow-pine mills in grades of No. 1 and No. 2 stock. The shipments of lumber during the month of November and the first half of December have not been up to the normal standard, on account of the scarcity of cars, and, of course, stocks at the mills are on the increase. There is probably an increase of about 3 per cent. at the mills in the



long-leaf district. Probably stocks at the present time are about as low as they will be for the next six months. The export business is, as usual, extremely dull. Some enquiries are coming in for South Americans, and also a few Cubans, but these schedules are not being taken by Texas mills, because the price at which they can be bought in Mobile, Pascagoula, Ship Island, etc., is much lower than the Texas manufacturer thinks the stock is worth, and as trade with the interior is very good, he does not care much about the business. In Mexico, however, there is a fine trade. This should hardly be called export business, as it is practically right at the mills' doors, and is of the same sizes and grades, as a general proposition, as are used in Texas and other consuming territory tributary to Beaumont and Orange mills. The timber trade continues to be very brisk. There is no lack of orders for any class of timber, but heart ties are probably in greatest demand. The call for this stock is something tremendous, and the mills are supplied with orders for such material for several months to come. Stringers are in good call, as is all sizes of railroad bridge timber. The commercial demand for timber is very fair. The demand for shingles and sash, doors and blinds is active. The Beaumont output in this line, that used to be shipped all over the southern half of the State, is now all used in Beaumont. Shingles are finding good sale in the State, especially primes and hearts, the latter at \$3.50 and the former at about \$2.90, although shipments are very slow, on account of the car famine.

#### Lumber Consolidation.

[Special Cor. Manufacturers' Record.]  
Cincinnati, Ohio, December 20.

Articles of incorporation of the Southern States Lumber Co., with a capital stock of \$200,000, were filed here yesterday, with Wm. Bevis of Hamilton, Ohio, and A. G. Tebbis of Hamilton, Ohio, as chief incorporators. The corporation is a consolidation of several properties in Tennessee and Mississippi; will manufacture lumber, and also handle lumber in large quantities on commission. The company has rented offices in the Union Trust Building, Cincinnati, where it will have its main office. Full information in regard to the corporation can be given by the Maltby-Hornaday Company, Union Trust Building, Cincinnati, Ohio. The new corporation will be ready for business January 1, 1902.

#### Lumber Notes.

Mr. J. W. Hall of Petersburg, Va., has just consummated a sale of 3500 acres of timber land to the Blackstone Manufacturing Co. The consideration is said to be \$37,500.

It is stated that the lumber firm of Woodward & Sons of Richmond, Va., has purchased valuable property in that city on which a factory will be built and a lumber-yard established.

A mortgage was recorded in Charleston, S. C., last week from the Atlantic Coast Lumber Co. at Georgetown to the Colonial Trust Co. of New York for \$2,000,000 on its real and personal property.

A new sash and blind factory will soon be completed at Bagdad, Fla., to replace the one recently destroyed by fire. The new factory will be 48x240 feet, and will be one of the best-equipped factories in the South.

The Montgomery county convicts were let to the highest bidder last week, the Williams Lumber Co. of Dothan, at \$12.50 per head, without regard to age, sex or condition. The lumber mills are higher bidders than the mine operators.

The saw-mill plant at Careyville, Fla., is being enlarged and put in first-class order, and will be in operation by January 1. This mill is said to be one of the largest in West Florida, with a cutting capacity of 100,000 feet of lumber daily.

The Cypress Lumber Co., with milling plant at Apalachicola, Fla., and head office at 153 Milk street, Boston, Mass., has issued its calendar for 1902. This calendar is most artistic in design and coloring, being among the highest types of the lithographer's art.

The shipments of lumber last week from the port of Mobile, Ala., amounted to 3,617,538 feet, and for the season 25,204,530 feet, against 29,090,651 feet last year. Shipments of sawn timber last week amounted to 92,572 cubic feet, and of hewn timber 35,234 cubic feet.

It is stated that a contract for the transfer of the J. F. Keith Lumber Co.'s interests to the Kirby Lumber Co. of Beaumont, Texas, has been signed. It is not known just when the transfer will be made, but it is settled that the Kirby Company will take charge at some time not far distant.

The Breece Dimension Co. of Panther, W. Va., to engage in the lumber-milling business, has been chartered, with a capital stock of \$5000. The incorporators are George E. Breece, T. E. Dougherty, Waverly, Ohio; R. E. Pendleton, Columbus, Ohio; W. M. Ritter and James L. Hammill, Welch, W. Va.

Articles of incorporation were filed last week at Newark, N. J., for the American Lumber Co., with a capital stock of \$8,000,000. The certificate of incorporation was signed by Albert R. Palmer, H. Schoenherr, Alfred George Brown and fifteen other incorporators. Western interests are said to be back of the enterprise.

The Price-Talliefarro Lumber Co. of Richmond, Va., was chartered last week, with a capital stock of \$10,000, to be increased to \$25,000. The officers of the company are S. B. Price, Hazelton, Pa., president; J. Potter Clark, Hazelton, Pa., vice-president; P. B. Talliefarro, Richmond, general manager, and W. M. Talliefarro, Richmond, secretary and treasurer.

The big new saw-mill plant of the James Strong Lumber Co. at Bristol, Va., was put in operation last week, and will be run day and night, cutting 100,000 feet of lumber. A similar mill of about equal capacity has just been completed at Damascus, and will be put in operation at once. This mill is on the line of the Virginia-Carolina Railroad, which runs from Abingdon to Shady Valley, Tenn.

Messrs. R. Long of Boone, Ala., and B. J. Moody of Dothan, Ala., visited Pensacola last week to investigate shipping facilities. These gentlemen represent Moody & Co. of New York, and are arranging for the shipment of 100,000 crossties monthly to Cuban and South American ports. Recent shipments by the above firm have been so successful that they will likely make Pensacola their primary shipping port.

The importance of Houston, Texas, as a great lumber center is showing a material advancement each year. A specially-chartered steamer and a large fleet of barges are now in service bringing millions of feet from the Trinity, San Jacinto and Buffalo rivers. Last week a consignment of 318,000 feet arrived by way of the bayou from the timber lands of the lower Trinity river. More than half a dozen of the largest lumber companies in the world have their headquarters at Houston.

Mr. H. V. B. Smith, until recently secretary to the president of the Tennessee

Central Railway, has been chosen secretary of the Powell Lumber & Mining Co., with headquarters at Crossville, Tenn., vice M. A. Powell, resigned. The latter company owns about 8000 acres of valuable coal and timber lands in Cumberland county, Tennessee, contiguous to the Tennessee Central, Nashville, Chattanooga & St. Louis and Cincinnati Southern railways, and is engaged in preliminary work looking to the development of its properties.

An entirely new use is claimed to have been discovered for Beaumont oil at Somerville, Texas. The crosstie works at that place, which are said to be the largest in the State, will experiment with it in preserving crossties and other timber. The process is as yet only in the experimental stage, but it is claimed to be more simple and cheaper than those in present use in preserving timber. Beaumont oil is the basis of the new process. The government at Washington has deputized an expert to go to Somerville to conduct experiments to determine the value of this process.

At Brookhaven, Miss., last week a party of prominent saw-mill men and capitalists from New Orleans assembled at that place to witness a practical demonstration of the new Alexander log-carrier in the Phillips Woods, one mile south of Brookhaven. The test proved very successful. Representatives of the Moreton & Helm Lumber Co. of Cold Springs, Miss., have closed a deal with Mr. Alexander for constructing one mile of the line at their big mills. This will afford the process a thorough practical test, and work will begin on it at once. The inventor has named the new carrier "an elevated cable system of transportation."

The town of Century is growing rapidly under the enterprise of the Alger-Sullivan Lumber Co. The immense plant of this company is among the best equipped in the South. The saw-mill proper is 315x60 feet, and three stories high. The mill-yards cover an area of twelve acres, with tracks leading from the mill to each of the docks, and side-tracks forming a network through the immense yards. The mill cuts on an average 300,000 feet of lumber a day. Some of the members of this lumber company are Col. W. D. Mason of New York, Martin H. Sullivan of Pensacola, Gen. Russell A. Alger of Detroit, Mich., and a number of others of equal wealth and prominence.

The last census report from Washington, D. C., on the industries of West Virginia shows that the manufactures in lumber ranked second among the products in that State in 1900, with 950 establishments, 5327 wage-earners, and products valued at \$10,612,827. In 1890 there were 454 establishments, with 4182 wage-earners, and products valued at \$5,515,065. The increase in the value of products during the decade was \$5,097,772, or 92.4 per cent. In 1898 there were in the State 16,000 square miles of forests, including spruce, poplar, and one of the largest hardwood timber forests in the United States. There was little development of the State's forest wealth until after 1865, owing to the lack of transportation facilities, and in 1870 lumbering held only fifth rank among the industries of the State.

It is stated that the Virginia-Carolina Chemical Co. of Richmond, Va., has transferred to the Charleston (S. C.) Mining & Manufacturing Co. 4000 acres of phosphate, farming and wooded lands situated in Maury, Lewis and Hickman counties, Tennessee. This land was bought some time since by R. H. Wright of the Virginia-Carolina Chemical Co.

## PHOSPHATES.

### Phosphate Markets.

Office Manufacturers' Record,  
Baltimore, Md., December 24.

The movement, as usual on the near approach of the holidays, in all phosphate circles, is limited, and in a local way trade is quiet. There has been very little demand during the week for domestic rock, the principal inquiry coming from foreign sources. Considerable sales of rock have been made for 1902 delivery, but few recent spot transactions are reported. The situation at mining centers in the South continues favorable, and the result of the year's business when summed up is expected to show in most cases satisfactory results under ruling conditions during the year. The Florida market for phosphate rock is firm for both hard rock and pebble. Mining operations are being extended in certain districts, and in Polk county several new plants are in course of erection near Mulberry, while new deposits are being discovered which are expected to show an analysis to warrant the erection of plants. Shipments from the ports have been fair during the present month. In South Carolina miners are busy, and shipments to foreign markets are improving. Prices for all grades of rock are nominally steady. Domestic business is reported quiet. In Tennessee there is a fairly active movement among miners, and at Mt. Pleasant and at other mining points the rock above ground is being nearly all removed. Operations in actual mining will open briskly at the opening of the new year, and if labor is plentiful and the weather fair considerable activity will ensue. Prices for both domestic and foreign rock are steady and unchanged. The following phosphate charters were reported last week: Steamship Stella, 1545 tons, from Fernandina to Leith at 11/1, January, and British steamship Alaska from Fernandina to Antwerp at 10/3.

### Fertilizer Ingredients.

The ammoniate market continues to rule very steady, with a fairly active demand from the South. Eastern buyers are in the market, and are expected to purchase freely after the holidays. Stocks in the West are firmly held, and recent heavy sales of tankage indicate a plentiful supply.

The following table represents the prices current at this date:

Sulphate of ammonia (gas)....	\$2 77/100 2 80
Nitrate of soda, spot Balto....	1 90 9/1 92 1/2
Blood.....	2 27 1/2 2 30
Azotine (beef).....	2 30 9/1
Azotine (pork).....	2 30 9/1
Tankage (concentrated).....	2 17 1/2 2 20
Tankage (9 and 20).....	2 25 & 10 9/1 2 30 & 10
Tankage (7 and 30).....	20 00 9/1 20 50
Fish (dry).....	26 00 9/1 27 00

### Phosphate and Fertilizer Notes.

The commissioner of the State agricultural department of Alabama reports the sale of fertilizer tags so far this year at about 115,000, against about 150,000 at this period last year.

The Atlantic Fisheries Co. at Old Brunswick, N. C., is having constructed a new \$40,000 steamer at Baltimore of 200 tons net displacement and a capacity of 1,000,000 fish, thus giving the company a fleet of three vessels. The new steamer will be known as the Atlantic.

The situation in phosphate circles in Polk county, Florida, is much improved. Most of the plants are now being operated, and it is expected all will be in operation in a short time. It is stated that preparations are being made to erect one or two phosphate plants near Mulberry in the near future. Some rare deposits have also been unearthed recently by prospectors in wild phosphate land, and it is understood that if the rock will stand the proper analysis a plant will be erected.

**MECHANICAL.****The Vermont Farm Machine Co.**

Herewith are shown views of the works of the Vermont Farm Machine Co., Bel-

mont in height. Not only is the whole of this large building utilized, but the boiler and engine house is a separate building, and the whole of one department has been moved into an adjoining building to increase capacity and meet the ever-

other advantage to the cream-gathering system is that all danger of spreading disease by getting skim milk mixed with that from infected herds is avoided. This company also furnishes outfits for the whole milk factory—i. e., where the whole milk is taken to the factory and there separated—when that system is preferred.

**Improved Belt Tripper.**

The general tendency in all machinery for grain elevators is towards greater attention to excellence of detail, and the demand of engineers is for a higher class of work throughout. In offering to the trade the belt tripper designed by it, the H. W. Caldwell & Son Co. of Chicago

clutches is engaged and transmits the power from the shaft through the gears, then through the sprocket wheels and chain to the track wheels. The direction of movement of the tripper depends upon whether the upper or lower friction clutch is engaged.

The gears are in housings, protecting the operator from being caught in the mesh of the teeth, and the sprocket wheels and chain are within the frame instead of outside, the placing of the mechanism outside the frame being considered objectionable and dangerous. The upright lever, which is shown on the side view of the tripper, is used for operating the track brake. The purpose of this

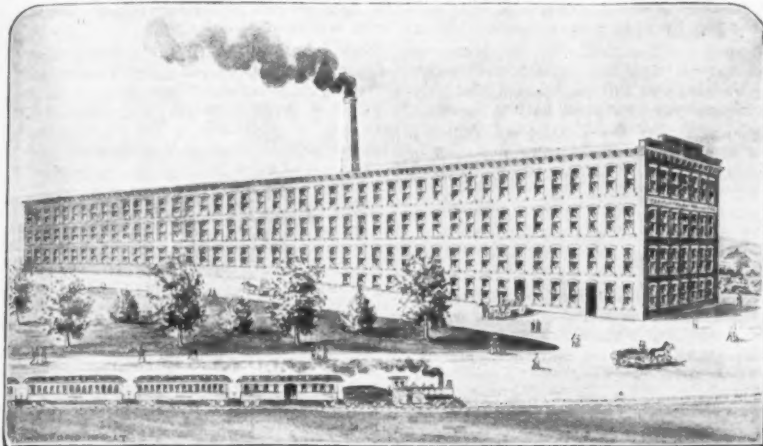


FIG. 1—EXTERIOR VIEW.

lows Falls, Vt., the manufacturer of the celebrated improved United States cream separator and other dairy and creamery apparatus. This company commenced business thirty years ago over a livery stable,

increasing demand for the separator.

The interior view is a portion of the machine shop, which occupies nearly one-half of the entire first floor. This department is devoted almost wholly to the

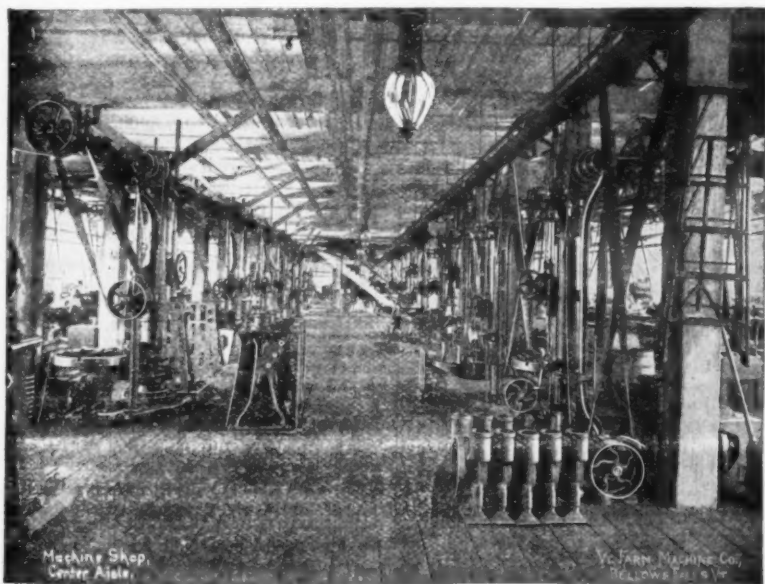


FIG. 2—INTERIOR VIEW.

and employed two men in the manufacture of sap evaporators. From this small beginning it has grown until today it is among the largest manufacturers of dairy goods in the United States, and probably

manufacture of the parts of the separator, and is fitted with the best machinery. No expense is spared to make the separator as near perfect as possible. Its users all over the land testify to its superiority in every-day work in dairies and creameries. At the Paris Exposition of 1900 it received the highest award of any separator manufactured in America, and at the National Buttermakers' Convention, held at St. Paul February 18-23, 1901, its products scored the highest, 98 points, out of 829 entries.

The Improved United States separators are made in a variety and number of sizes and styles to suit the needs of the purchaser, from the small size with a capacity of 150 to 175 pounds of milk an hour for those who have only a few cows, to the large factory size with a capacity of 3000 pounds or more per hour. This company also supplies complete creamery outfits, and the quality of its goods can be testified to by the large number of creameries it has fitted out. One of its features is the gathered-cream system for creameries. The number of creameries using this system is constantly increasing, which is proof of its profitability. By this system the cream is separated at home by the patrons, then carried to the creamery by the cream-gatherer. An-

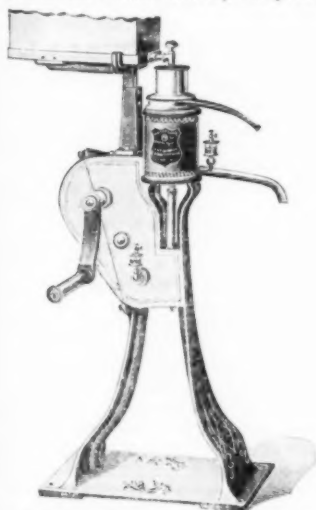


FIG. 3—CREAM SEPARATOR.

in the world, and has an enviable reputation for the superior quality of its goods.

The main building is 355 feet long and 60 feet wide, and three stories and base-

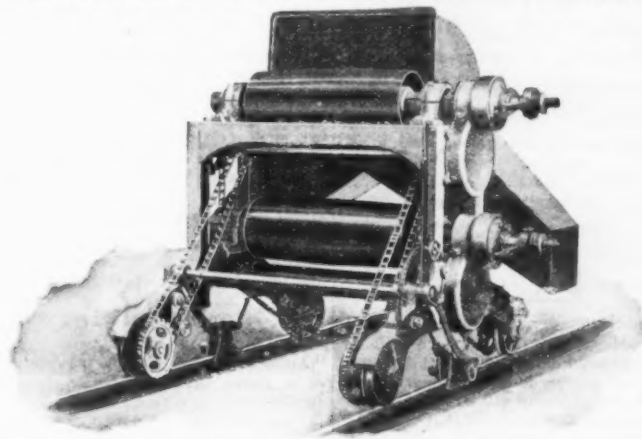


FIG. 1—BELT TRIPPER—FRONT VIEW.

has endeavored to fill this demand, and the attention to details in the construction of the tripper manufactured by it is evidence of an effort to produce the highest class of machinery for grain-elevator work.

Upon examining the illustrations it will be noticed that the frame of the tripper is of substantial design, and so arranged that all strains are properly provided for. It is heavy in construction and strongly braced. The bearings for the pulley shafts are ring-oiling bearings arranged to prevent dust from entering, and the pillow-blocks are so arranged that the bearings may be adjusted so that the pulleys can always be kept exactly in line. The

brake is to fasten the tripper into position when it has been moved into place. A peculiar arrangement of this track brake is that not only are the two side plates of the brake arranged to grip the rail, but when the lever is moved to disengage the brake it not only releases the clamp pieces, but lifts them above the level of the rail and thus places the clamp entirely out of contact with the rail. Instead of running the sprocket chain as a continuous chain around all of the wheels, each track wheel has an independent chain, and tightening wheels are provided, so that at all times the chain will have proper tension.

In offering this improved belt tripper

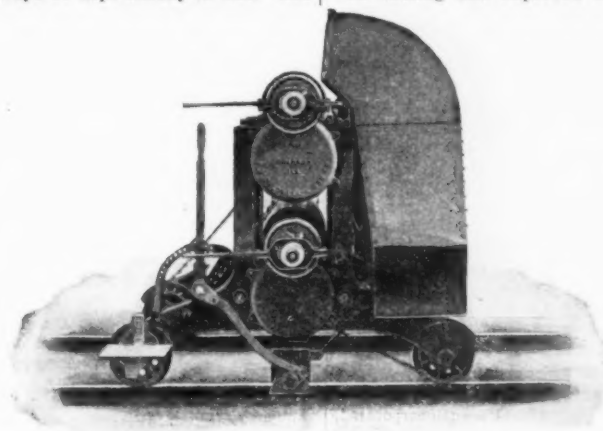


FIG. 2—BELT TRIPPER—SIDE VIEW.

tripper shown is what is known as a self-propelling tripper; in other words, the conveying belt itself furnishes the power necessary to move the tripper back and forth upon its track, so that the tripper can be placed wherever desired. It is in the arrangement of this self-propelling mechanism that the chief improvements in design have been made.

Attached to the pulley shafts are two friction clutches. These friction clutches are attached to the gears, which are within the gear-housings shown on the illustration, and are not engaged when the tripper is stationary and delivering grain, but when it is desired to move the tripper along its track one or the other of the

to the trade the H. W. Caldwell & Son Co. believes that even at a slight additional cost it will be preferred by elevator engineers and builders of grain elevators who recognize its value.

The branch plant of Armour & Co. at El Paso, Texas, is about completed, and will commence operations, handling fresh meat and provisions for the trade of Western Texas, New Mexico and the Republic of Mexico. About \$30,000 has been expended on the plant.

During the year ended December 15 there were 1343 charters filed in the office of the secretary of State of Texas, representing a capital stock of \$277,088,000.



# CONSTRUCTION DEPARTMENT.

**THE MANUFACTURERS' RECORD** seeks to verify every item reported in its Construction Department by a full investigation and complete correspondence with everyone interested. But it is often impossible to do this before the item must be printed, or else lose its value as news. In such cases the statements are always made as "rumored" or "reported," and not as positive items of news. If our readers will note these points they will see the necessity of the discrimination, and they will avoid accepting as a certainty matters that we explicitly state are "reports" or "rumors" only. We are always glad to have our attention called to any errors that may occur.

\*Means machinery, proposals or supplies are wanted, particulars of which will be found under head of "Machinery Wanted." In correspondence relating to matters reported in this paper, it will be of advantage to all concerned if it is stated that the information was gained from the Manufacturers' Record.

It often occurs that the organization of a new company in a town is not known by the postmaster, and hence letters addressed to the company are returned marked "not known." The Manufacturers' Record reports the first organization of all companies, and our readers, in seeking to get into communication with them, should be very careful in deciding how to address them, and it is often advisable to add the names of one or more incorporators as an aid to the postmaster in delivering mail.

## ALABAMA.

Avondale—Stove Foundry, etc.—It is reported that Avondale Stove & Foundry Co. has purchased site at \$6000, and will erect an additional plant to cost \$50,000.

Birmingham—Store Building.—Chamblee Bros. will erect a new store building.

Birmingham—Oil Refinery.—It is reported that Wm. W. Lindsay of Detroit, Mich., president of Aetna Oil Refining Co., is investigating with a view to establishing a \$50,000 oil refinery in the Birmingham district.

Blocton—Water-works.—Alber & Byrne of Birmingham are preparing plans and specifications for a water-works plant at Blocton; E. D. Reynolds, mayor.

Gadsden—Knitting Mill.—A. T. Stocks is said to contemplate the erection of a knitting mill.\*

Gadsden—Coal and Iron Mines.—Coosa Valley Coal, Iron & Mining Co., W. E. Knox, president, will meet January 18 to increase capital from \$50,000 to \$100,000.

Huntsville—Light and Power Plant.—Huntsville Railway, Light & Power Co. will improve its plant at a cost of \$25,000.

Mobile—Harness Company.—Armbricht-Hewitt Harness Co. has been incorporated, with capital of \$3000, by Caesar Armbricht, Oscar K. Hewitt and others.

Sylacauga—Knitting Mill.—Alabama Mills, previously organized, has completed plant of fifty machines; capital \$50,000, and J. E. Pearson, president.

Tuscaloosa—Water-works.—Tuscaloosa Water Co. will improve its plant. Address A. A. Boardman, receiver.

## ARKANSAS.

Devall's Bluff—Button Factory.—Tilbi Button Works has installed twenty-two new machines for enlarging capacity of its pearl-button works.

Harrison—Implement Company.—Harrison Implement Co. has been incorporated, with capital of \$4000, by F. M. Garvin, president; C. H. Lombard, H. A. Bower and others.

## FLORIDA.

Bagdad—Sash and Blind Factory.—Bagdad Sash Factory Co. will erect new factory 48x240 feet to replace the one recently burned.

Jacksonville—Sugar Plantations, etc.—Florida East Coast Drainage & Sugar Co., represented by J. R. Parrott, G. R. Pridge, James E. Ingraham and E. M. Ashley, is said to have arranged with M. Fichtenberg and Henry Benedict of Milwaukee, Wis., to furnish \$5,000,000 capital to develop the Everglades; company holds over 1,000,000 acres of land, which it proposes to drain, plant in sugar-cane, erect factories and manufacture sugar.

Pensacola—Lumber Company.—Pensacola Tar & Turpentine Co. has been incorporated, with capital of \$24,000, to deal in land and timber and the products thereof, by L. M. Lindsay, F. E. Marriner and J. M. Muldon.

Pensacola—Land Company.—Chartered: Alabama & Florida Land Co., with capital stock of \$100,000, by E. E. Reese, J. M. Cross and J. H. Reese.

Tampa—Cigar-box Factory.—Kirkland Lumber Co., A. Kirkland, president, will install machinery for the manufacturing of cigar boxes.\*

## GEORGIA.

Athens—Drug Company.—Billups and Charles Phinley, R. T. DuBose, R. C. Orr and others have incorporated a \$10,000 stock company, with privilege of increasing to \$50,000, for operating the drug business of Orr Drug Co.

Atlanta—Water Supply.—Howell Jackson of St. Louis, Mo., has made a proposition to furnish Atlanta with an increased supply of filtered water.

Brunswick—Sash, Door and Blind Factory.—Gosch Sash, Door and Blind Factory has been removed from North Carolina to Brunswick, and new building will be erected.

Columbus—Woodworking Factory.—The company previously reported to be organized by F. J. Dudley, T. W. Butts and others for manufacture of sash, doors, blinds and general woodwork, and to absorb the two plants operated by above parties, will be known as Dudley-Butts Sash, Door & Lumber Co., incorporated with capital of \$15,000.

Columbus—Cotton Mill.—Eagle and Phenix Mills has ordered 100 looms to replace looms worn out.

Cordele—Lumber Company.—E. L. Marbury and T. A. McElreath have organized the Marbury Lumber Co., with offices in the Bolton Building.

Fannin County—Gold Mines.—Ranz Hill Mining Co. has been incorporated, with capital stock of \$500,000, by Geo. E. Towne of Silver Creek, N. Y.; Daniel A. Reed and W. J. Lawrence of Dunkirk, N. Y.; C. G. Baugh of Mineral Bluff, Ga., and others; company has leased and purchased 390 acres of gold-mining properties, will erect mill and install crusher with capacity for crushing twenty-four tons every twenty-four hours.

Gainesville—Fertilizer Factory, Cotton Compress, etc.—John A. Smith Manufacturing Co., W. C. Thomas and Edwin A. Smith have incorporated the Smith-Thomas Company, with capital stock of \$10,000, and privilege of increasing to \$100,000, for operating warehouse and cotton compresses, manufacturing fertilizers, conducting saw and lumber mills, etc. John A. Smith is president, and W. C. Thomas, vice-president.

Griffin—Sewing-machine Attachment.—Griffin Hand Lever Sewing Machine Attachment Co. has been organized by W. H. Beck, president; Douglas Glessner, vice-president; T. E. Patterson, general manager, and M. J. Daniel, Jr., secretary and treasurer, for manufacturing a hand-lever attachment for running sewing machines, patented by Mr. Beck.

Jimps—Saw mill.—Statesboro Lumber Co., recently organized, with office at Statesboro, Ga., will build large saw-mill at Jimps.

Savannah—Brewery.—Herman Winter, Henry Blum and Geo. W. Tiedeman have incorporated Herman Winter Brewing Co., with capital stock of \$100,000, for establishment of brewery.

Tifton—Ice Factory.—L. P. Thurman, W. W. Banks of Tifton, E. W. Lane and B. W. Bentley of Valdosta, Ga., have incorporated Tifton Ice Co., with capital of \$10,000, for manufacture of ice.

Winder—Electric-light Plant and Water-works.—City contemplates constructing electric plant and water-works. Address "The Mayor."

## KENTUCKY.

Ashland—Coal and Iron Company.—Ashland Coal & Iron Co. has increased its capital stock from \$600,000 to \$3,000,000.

Auburn—Telephone System.—Auburn Telephone Co. has been incorporated, with capital of \$400, by T. O. Hein and others.

Columbia—Flour Mill.—W. R. Myers of Greensburg, Ky., has purchased Columbia Roller Mill, and will install new machinery to increase capacity to 100 barrels per day.

Frankfort—Oil Wells.—Anderson Oil Co. has been incorporated, with capital stock of \$10,000, by J. H. Hazelrigg, C. P. Chenault and W. T. Havens.

Henderson—Foundry.—Frayser & Melton Manufacturing Co. will erect new foundry of two buildings, one 40x100 feet and the other 36x80 feet.

Hopkinsville—Telephone Company.—Cumberland Telephone & Telegraph Co. will increase its capital stock \$187,500 for the purpose of making some extensions and improvements.

Lexington—Oil Wells.—Kentucky & Ohio Oil Co., with capital stock of \$200,000, has been incorporated by J. B. Jones, C. C. Harris and Sam C. Hardin.

Louisville—Mercantile.—Chartered: Ridge-Walker Company, with capital of \$1000, by J. R. Murphy and others.

Louisville—Paper Mill.—Commercial Club is in correspondence with parties relative to establishing a paper-box factory at Louisville.

Madisonville—Coal Mines.—James R. Rash, trustee, of Earlinton, Ky., has purchased the property of Monarch Mining Co. of Madisonville, and will, it is reported, organize a new company to continue operations.

Monticello—Oil Wells.—Parnell Oil Co. has been incorporated, with capital stock of \$20,000, by William McConnaghy, T. L. Humble and P. M. Berwald.

Owensboro—Educational.—Chartered: Seven Hills Chautauqua Co., with capital stock of \$20,000, by W. E. Parrish and others.

Paducah—Vinegar Company.—Chartered: O. L. Gregory Vinegar Co., with capital of \$100,000, by O. L. Gregory, A. M. Ogilvie and C. A. Tyndall.

Paris—Telephone Exchange.—Franchise has been granted the Fayette Home Telephone Co. of Lexington, Ky., for construction and operation of an exchange in Paris. Item was reported by mistake lately under Paris, Texas.

Princeton—Mining.—Haffan Mining Co. has been incorporated, with capital of \$25,000, by H. M. Preston, A. H. McKelvey and Frank Barnhart, all of Warren, Pa.

## LOUISIANA.

Boyce—Cotton Gin, etc.—Ulster Ginning Co., Limited, has been incorporated, with H. O. Boyce, president; W. P. Hayne, vice-president, and C. H. Blanchard, secretary, to gin and purchase cotton and cottonseed. Address secretary.

Jennings—Machine Shops.—Heywood Bros. & Dobbins have purchased Boehm Bros.' machine shop, and will install new machinery.

Jennings—Oil Refinery.—A. T. Smith, A. J. Haller and Geo. B. Meacham of New York, stockholders of the Gusher City Oil & Refining Co., are making arrangements for the erection of an oil refinery at Jennings.

Lake Providence—Electric-light Plant and Water-works.—Ben Johnson of Greenville, Miss., has received contract at \$20,245 for erection of proposed electric-light plant and water-works at Lake Providence.

New Orleans—Building Company.—Henry Beer, C. M. Abrams and C. Edmund Kells, Jr., have incorporated De Soto Building Co., Limited, with capital of \$40,000.

New Orleans—Shipyard.—R. C. Wilson is interested in the organization of a \$150,000 stock company for the construction of a new style light-draft steamer. Among others interested are Capt. Thos. J. Woodward and Capt. W. G. Wilmot.

New Orleans—Cold-storage Plant.—New Orleans Cold Storage & Warehouse Co., Limited, has awarded contract to Geo. B. Swift & Co. of Chicago at \$131,000 for erection of its proposed cold-storage plant; buildings will embrace boiler-house 68x65 feet; refrigerating house 68x65 feet, and main cold-storage structure, six stories, 185x85 feet.

New Orleans—Structural Iron Works.—Luken Iron & Steel Co., which recently purchased Reynolds Iron Works, will use same as an addition to its plant for increasing capacity; recent purchase will be known as annex No. 3, and it is intended to carry long and heavy structural material of all kinds

and classes; cold saw will be installed to cut any size, weight and length; J. W. Porch, local representative.

New Orleans—Dry-docks, etc.—Gulf Coast Shipbuilding & Dry-Dock Co. will commence work on construction of its docks and repair shops previously reported. The question of erecting the shipyards is left in abeyance for the present. Samuel B. McConnico, secretary, has office at Room 915, Hennen Building.

New Orleans—Land Improvement.—S. R. Olliphant, Edward L. McGehee, C. J. Bell, J. P. Adams and others have incorporated St. Tammany Health Homes Co., Limited, with capital stock of \$300,000, to own and control the town of St. Tammany, and to improve same by laying out streets, building dwellings, hotels, etc.

Thibodaux—Mattress, etc., Factory.—Thibodaux Moss Factory Co., Limited, recently reported incorporated, will manufacture mattresses, collars, pads, etc.; capacity 100 bales of moss per day; building 50x150 feet will be erected.

Winona—Saw-mills.—Pine Tree Lumber Co., Limited, has been incorporated, with J. F. Crawford, president; F. H. Thwing, vice-president; George G. Solberg, secretary, and J. E. Crawford, general manager, all of Oklahoma City, O. T., where the company's general offices are located; company owns and controls 50,000 acres of yellow-pine stumpage in Louisiana, and has completed two saw-mills for developing the property; capacity, 100,000 feet daily.

## MARYLAND.

Cumberland—College.—Chartered: Central Commercial College, with capital of \$5000, by L. D. Rohrer and others.

Frostburg—Water-works.—Chartered: Frostburg-Grahamton Water Co., with capital of \$1500, by James Hanson, Wm. H. Hawkins, Geo. O. Cook, Chas. G. Watson and others.

Tacoma Park—Water-works and Sewerage System.—City will sell \$10,000 of bonds, proceeds to be used in construction of water-works and sewerage; S. S. Shedd, mayor.

Washington, D. C.—Novelty Works.—Nedo Company has been incorporated, with capital stock of \$25,000, by Stewart W. Walker, B. F. Oden of Martinsburg, W. Va.; C. T. Price, Thos. W. Keller of Washington and others, to manufacture novelties.

Westminster—Lime Works.—H. Price Goodwin, M. John Lynch, T. Herbert Shriver and others have incorporated the Goodwin Lime Co., with capital stock of \$5000, for manufacturing lime and development of limestone quarries, etc.

## MISSISSIPPI.

Columbus—Water-works and City Hall.—City will petition the legislature for authority to issue \$50,000 of bonds for improving its water-works and erecting a new city hall; C. S. Lincoln, mayor.

Ellisville—Ice and Cold-storage Plant.—Ellisville Ice & Cold Storage Co., recently reported incorporated, will erect five-ton ice and 10-ton refrigerating plant.\*

Ellisville—Saw-mill.—Anchor Saw-Mill Co., reported last week as incorporated for manufacture of lumber, etc., has purchased a mill, which it will greatly enlarge; company has in operation four and one-half miles of standard-gauge track, which it will lengthen. Address T. S. Howell.

Vicksburg—Lumber Mills.—Messrs. Cross & Johnson and others of Ragan, Neb.; R. M. Trumbull of Hildreth, Neb., and O. R. Wood of Vicksburg have organized Mississippi Lumber Co., and will establish lumber and building material mills. Address, Piazza & Botto Building, Vicksburg.

## MISSOURI.

Marshall—Electric-light Plant and Water-works.—City has voted issuance of \$70,000 of bonds for its proposed electric plant and water-works. Address "The Mayor."

Mexico—Electric-light Plant.—City will vote December 30 on municipal ownership of electric-light plant. Address "The Mayor."

Poplar Bluff—Development Company.—Pike Creek Development Co., with capital of \$24,000, has been incorporated by James V. Webb, Frank D. Hartel, James A. Duffy and others.

Poplar Bluff—Spoke Factory.—Joseph Ashcroft of Portland, Ind., representing F. Blmel of same town, is completing arrange-

ments for the erection of large spoke factory in Poplar Bluff.

Springfield—Broom Factory.—Anchor Broom Co. has been incorporated, with capital of \$5000, by J. W. Wren, Geo. Wiley and J. W. Crank.

St. Louis—Realty Company.—Chartered: Merrimac Realty & Building Co., with capital of \$10,000, by A. L. Meglitsch, C. E. Ritcher and others.

St. Louis—Iron Company.—Shickle, Harrison & Howard Iron Co. has increased capital stock from \$1,000,000 to \$2,500,000.

St. Louis—Printing and Publishing.—Chartered: St. Louis County Printing & Publishing Co., with capital of \$6000, by Otto Preiss, E. F. Bautzer and others.

St. Louis—Electrical Construction.—Chartered: Electrical Construction & Maintenance Co., with capital stock of \$20,000, to conduct general electric-lighting and power business.

St. Louis—Mining.—Arkansas Mining Co. has been incorporated, with capital of \$100,000, to conduct oil, mineral, mining and smelting business, by Julius C. Hainer and others.

Wentworth—Mineral Lands.—Edwin H. Mower, president of the Continental Zinc Co. of Joplin, Mo., who claims to represent Mark T. Cox of New York, has purchased 160 acres of mineral property near Wentworth; tract has a mill and mine located upon it known as the Gobbler mine.

#### NORTH CAROLINA.

Appalachia—Land Company.—Cherokee Land Co. has been incorporated, with capital of \$50,000, by E. C. Myers, W. H. Ferribee, H. W. McCoy and M. W. Bell.

Asheville—Canal and Dam.—W. T. Weaver Power Co. (reported recently) has let contract to C. R. Willard for construction of hydraulic canal and dam to develop its water-power property; 3500 horse-power is to be developed.

Graham—Cotton Mill.—Voorhees Manufacturing Co. has been incorporated, with \$100,000 capital stock, to build the cotton mill reported last week as to be established by Pomeroy Bros. Incorporators are Theo. Pomeroy, James V. Pomeroy, Mrs. C. S. D. Pomeroy and Grace D. Pomeroy.

High Falls—Flour Mill.—High Falls Manufacturing Co. contemplates erecting roller flour mill.

Lynch—Flour Mill.—D. C. Lynch will build 20 to 30-barrel roller mill, to be operated by water-power.

North Wilkesboro—Lumber Company.—Wilkes Lumber Manufacturing Co. has been incorporated, with capital of \$4800, and privilege of increasing to \$50,000, by E. F. Stafford, A. M. Church, R. L. Church and others.

Statesville—Electric-light Plant.—City will repair at once that part of its electric-light plant damaged by fire. Address "The Mayor."

Statesville—Vinegar Factory.—Z. L. Brown and Eugene Parker have organized the Statesville Vinegar Works.

Washington—Water-works.—City has granted franchise to S. S. Spruks and Geo. T. Leach for construction of water-works, as recently reported; fifty hydrants for fire purposes will be installed; pumping station with water tower or tank and six miles of pipe will also be required.

Winston—Knitting Mill.—The mill previously reported as to be established by J. W. Hanes has been completed and is operating 100 machines under the title of Shamrock Knitting Mills. J. F. Bard is also interested.

#### SOUTH CAROLINA.

Laurens.—It is rumored that Laurens Cotton Mills has purchased site for another mill; now has 40,320 spindles and 1183 looms.

Pomaria—Flour Mill.—W. W. Birley will erect flour mill.

#### TENNESSEE.

Cleveland—Cotton-oil Mill.—Cleveland Milling Co. contemplates installing cottonseed-oil mill.\*

Crossville—Coal and Timber-land Development.—Powell Lumber & Mining Co., which owns about 8000 acres of coal and timber lands, is engaged in preliminary work looking to the development of the properties; H. V. B. Smith, secretary.

Knoxville—Fence Works.—H. O. Nelson, proprietor of Valley Forge Fence Works (late burned), will rebuild at once; loss was \$10,000.

Knoxville—Mantel and Tile Company.—W. O. White, J. C. White, J. E. Lutz and others have incorporated White Mantel & Tile Co., with capital of \$10,000.

Memphis—Manufacture.—The Industrial

League of Memphis is in conference with A. S. Dodge of St. Louis, Mo., relative to the establishment of a manufactory at Memphis.

Nashville—Snuff Factory.—Standard Snuff Co. will increase its capital stock from \$150,000 to \$300,000 for enlarging its business.

Nashville—Sewers.—Board of public works has let contract to T. J. Pease at \$47,796 for construction of an addition to Lick Branch sewer.

Tennessee—Lumber Company.—Southern States Lumber Co. has been incorporated, with capital of \$200,000, to manufacture and sell lumber, consolidating several properties in Tennessee and Mississippi. Wm. Bevis and A. G. Tebbs of Hamilton, Ohio, are the chief incorporators. For information address Maltby-Hornaday Company, 914 Union Trust Building, Cincinnati, Ohio.

Unaka Springs—Medicine Factory.—Unaka Medicine Co. has been organized for the manufacture of proprietary medicines; T. W. Whitlock, general manager.

#### TEXAS.

Bay City—Bridge.—"Commissioners' Court" will begin at once construction of the proposed bridge over the Colorado river, for which \$40,000 of bonds was voted last July.

Beaumont—Oil Wells.—El Dorado Oil Co. will increase its capital stock to \$300,000 for the purchase of additional oil properties; H. A. West, president.

Beaumont—Oil Wells.—Texas-Meridian Oil Co. has been incorporated, with capital stock of \$1,000,000, to develop and market oil, by W. A. Ward, Guy W. Junker and others.

Beaumont—Oil Pipe Lines.—Beaumont Oil & Transportation Co., reported recently to apply for charter (under New Jersey laws) for transporting oil from Gulf of Mexico to New York, Boston and Philadelphia, has received charter; capital stock is \$2,500,000, and incorporators Kennard K. McLain, Raymond Newton and Evan J. Dudley, all of New Jersey.

Beaumont—Oil Wells.—Chicago-Texas Oil Co., with capital stock of \$2,000,000, has been incorporated by R. L. Cox, R. L. Brady, R. H. Adair, J. W. Boynton and others.

Beaumont—Oil Wells, Pipe Lines, Refinery, etc.—British capitalists represented by the Roche-Stewart syndicate of London has purchased the Hogg-Swayne property at Beaumont for \$6,000,000; parties have already contracted for construction of storage tanks of large capacity, pipes lines from the oil fields to Port Arthur, and for building a refinery at Port Arthur at an estimated expenditure of \$300,000; refinery will have daily capacity of 6000 barrels.

Beaumont—Oil Wells.—German-American Oil Co. has increased capital stock to \$2,000,000.

Beaumont—Oil Wells.—Beaumont-Midland Oil Co. has been incorporated, with capital stock of \$150,000, by B. P. Bogy, T. B. Crews of St. Louis, Mo.; G. A. Carden of Dallas, Texas, and others.

Dallas—Foundry and Machine Shops.—Dillon Machine Co. will erect new buildings for enlarging its foundry and machine shops.

Eagle Lake—Lumber Company.—A. C. McClannahan Lumber Co., with capital stock of \$20,000, has been incorporated by G. A. Dascomb, A. C. McClannahan and A. M. Waugh.

Enloe—Hardware, etc., Company.—Enloe Hardware & Grocery Co. has been incorporated, with capital of \$10,000, by T. J. Record, Abe Goldman and H. S. Bettes.

Galveston—Oil Wells.—Gold Penny Oil Co. has been incorporated, with capital stock of \$500,000, by C. A. Haertel, Waukesha, Wis.; Edmund Brown, H. P. McLaughlin of Houston and others.

Houston—Land Company.—Chartered: Seabrook Land Co., with capital stock of \$2500, has been incorporated by J. N. Taub, J. D. Staples, I. S. Myer and others.

Houston—Canal, Sugar Refinery, Rice Cultivation, etc.—Bryant-McEnnis Land Co., real estate dealer, is promoting several enterprises, including rice canal and plant to be constructed on the Colorado river, and which, when completed, including over 6000 acres of rice land, will be worth \$300,000. Bids on construction are now being advertised for. Company is also negotiating to incorporate a stock company to raise, manufacture and refine sugar. Capital stock will be from \$2,500,000 to \$3,000,000. The company will have as a basis two large sugar plantations, with two mills and a refinery with capacity of 700 barrels per day.

Mount Pleasant—Ice Company.—Mount Pleasant Pure Ice Co., with capital stock of \$12,000, has been incorporated by G. H. Nesbitt, R. G. Andrews and R. C. Campbell.

Orange—Lithographing.—Chartered: Rein Lithographing Co., by Chas. M. Rein, A. L.

Ford, J. W. Link and others, with capital of \$50,000.

Orange—Chemical Plant.—Texas Chemical Co. will erect plant to manufacture sixty tons 66-degree sulphuric (not boracic, as lately reported) acid per day from plans by Joseph Broome, chemical engineer, of 123 Liberty street, New York city.

Port Arthur—Oil Refinery.—See item under Beaumont, Texas.

Wallisville—Electric-light Plant.—It is reported that the Texas Oil, Land & Investment Co. will build an electric-light plant.

#### VIRGINIA.

Bedford City—Cigar, etc., Factory.—Dixie Tobacco Co. will rebuild its factory lately burned.\*

Bentonville—Flour Mill.—Fielding Bros. will erect 50-barrel flour mill.\*

Danville—Corn Mill.—Thos. Newton will build corn mill.

Farmville—Street Improvements.—City will submit to vote an expenditure of \$5000 for street improvements; W. T. Blanton, mayor.

Hampton—Water-works.—The company recently reported to be organized for construction of water-works for Hampton and surrounding towns has incorporated as the Peninsula Pure Water Supply Co., with capital stock of \$200,000. Chas. Collier of Philadelphia, Pa., is president; A. L. Osgood, vice-president, Camden, N. J.; John Birkinbine, consulting engineer, Odd Fellows' Temple, Philadelphia, Pa.

Norfolk—Mercantile.—Chartered: Shelsky-Hornthal Company, with capital stock of from \$50,000 to \$100,000.

Norfolk—Cotton-bagging and Tie Factory.—Chas. W. Priddy Co. has incorporated, with capital of \$15,000 to \$50,000, for the manufacture of cotton bagging and ties. Chas. W. Priddy is president; J. T. Waddrey, secretary, and R. A. Old, treasurer.

Richmond—Lumber Company.—Price-Tallafiero Company has been incorporated, with capital stock from \$10,000 to \$25,000, for conducting lumber business, by S. B. Price, president, Hazleton, Pa.; J. Potter Clark of Hazleton, vice-president, and W. M. Tallafiero, secretary and treasurer.

Stickleyville—Flour Mill.—It is reported that G. Duff and L. Horn will erect new flour mill.

Suffolk—Meal Mill.—Barton & Jeffery are erecting three-story brick building 36x42 feet, which will be equipped as cornmeal and feed mill with capacity of 1000 bushels per day capacity, as recently reported; will also erect steel storage tanks of 20,000 bushels capacity; electric-power or steam-power will be used in operating.\*

Vigor—Excelsior Mill.—W. J. Craut contemplates establishing an excelsior mill.\*

#### WEST VIRGINIA.

Charleston—Lumber Mill.—David S. Collin and others have incorporated the Elkhurst Planing Mill & Lumber Co., with capital stock of \$50,000.

Charleston—Coal Mines, etc.—Champion Coal & Coke Co., to deal in mineral land, mine coal, manufacture coke, etc., has been incorporated, with capital of \$60,000, by O. A. Thayer, G. T. Thayer and others.

Dingess—Coal Mines.—John A. Clark of Fairmont, W. Va., and A. J. Ruckman of Monongah, W. Va., have purchased the plant and holdings of Pearre Coal Co., and will increase capacity from 300 to 600 tons per day.

Elkins—Tannery.—Listler, Lesh & Co. of Boston, Mass., and Lock Haven, Pa., have purchased thirty-two acres of land at Elkins, and will erect a tannery.

Fairmont—Coal Lands.—Geo. L. Hibbs, J. R. and J. E. Barnes of Uniontown, Pa., have purchased 670 acres of coal lands, and will probably develop.

Grafton—Electric-light Plant.—Grafton Gas, Electric & Power Co. states that it will not make any improvements to its plant, as had been reported.

Harrison County—Coal Mines.—J. W. Miller and I. R. Barnes of Uniontown, Pa., have purchased and will develop 420 acres of coal lands.

Huntington—Coal Company.—Chartered: Pigeon Coal Co., with capital of \$25,000, by William Crocker, Z. T. Vinson, S. J. Bryson and others.

Moundsville—Coal Mines.—John A. Clark of Fairmont, W. Va., and A. J. Ruckman of Monongah, W. Va., have purchased the Moundsville shaft of the Moundsville Coal Co., embracing 675 acres; the daily output of 600 tons will be doubled.

Moundsville—Sewerage System.—City Engineer Herst has completed plans for city's

proposed sewerage; total cost of entire system will be \$170,475.

New Martinsville—Electric-light and Power Plant.—New Martinsville Electric Light, Heat & Power Co., recently reported incorporated, will erect a plant which will consist of building 38x85 feet, brick, with stone trimmings and slate roof, equipped with two 200-horse-power boilers, two 16x18 engines, two 100-kilowatt alternators, transformers, arc lamps, meters, etc. Frank B. Hall is president.

Panther—Lumber Mill.—Geo. E. Breece, T. E. Daugherty of Waverly, Ohio; W. M. Ritter, James L. Hamill of Welch and others have incorporated Breece Dimension Co., with capital of \$5000, to conduct lumber mill.

Parkersburg—Flour Mill.—Chartered: New Peerless Mill Co., with capital of \$50,000, to manufacture flour and deal in grain, by Abram Smith, T. G. Reitz and others.

Shepherdstown—Knitting Mill.—Pennant Knitting Co., previously reported, has its mill in operation with eighty-eight machines.

Welch—Coal Mines.—Climax Coal Co., lately reported organized for development of coal properties near Welch, will equip plant this winter and increase its capital stock as operations grow. Address J. Singleton Diggs, secretary and treasurer, Lynchburg, Virginia.

Weston—Hardware Company.—Chartered: Curll, Ely & Roane Hardware Co., by H. V. Curll, J. L. Lytle, H. M. Curll of Pittsburgh, Pa.; R. H. Ely and J. C. Roane of Weston.

Wheeling—Coal Mines.—Riverview Coal Co., with capital stock of \$300,000, has been incorporated by E. T. Hitchman of Cannonsburg, Pa.; W. H. Koch, Howard Hazlett, Lawrence E. Sands and others, all of Wheeling.

Wheeling—Roofing Supply Company.—National Roofing Supply Co., with capital of \$25,000, has been incorporated to manufacture roofing supplies, by Richard Ryan, H. A. Layman and others.

#### INDIAN TERRITORY.

Indianola—Ice, Light and Power Company.—Indianola Ice, Light & Power Co. has been incorporated, with capital of \$50,000, by C. W. Dawley, Franklin Bach, P. W. Adams and others of Hartshorne, I. T.

Muscookee—Water-works and Sewerage.—City has voted issuance of \$15,000 of bonds for the water-works recently reported and \$25,000 of bonds for construction of a sewerage system; P. J. Byrne, mayor.

Ocmulgee—Mercantile.—Chartered: Parkerson-Trent Mercantile Co., with capital of \$100,000 and James Parkerson, president, and others.

South McAlester—Brick Works.—Choctaw Pressed Brick Co. has been incorporated, with capital of \$50,000, by W. S. Ambrose, E. J. Fannin, H. H. Keller and others.

#### OKLAHOMA TERRITORY.

El Reno—Power Plant.—El Reno Power & Street Railway Co. has been incorporated, with capital stock of \$50,000, to operate a lighting system for the town, by Geo. W. Bellamy, Thomas H. Reid, R. B. Forrest and others.

Lawton—Publishing.—Chartered: Lawton Publishing Co., with capital stock of \$1200, by David A. Jacobs, J. Roy Williams and others.

Oklahoma City—Telephone System.—Oklahoma Consolidated Railway Co., reported elsewhere as incorporated, will operate telephone system in connection with its electric railways.

Oklahoma—Brick and Tile Works.—American Brick & Tile Works has been incorporated, with capital of \$28,500, by I. N. Phillips, C. A. Compton, W. I. Young and others.

Oklahoma City—Mercantile.—Chartered: Oklahoma Wholesale Mercantile Co., with capital of \$25,000, by Philip Lewin and others.

Oklahoma City—Nursery.—G. A. Gamble of Fort Smith, Ark., has purchased the Oklahoma City Nursery of W. R. Caldwell, also sixty acres of land near Oklahoma City, where he will establish an extensive plant.

Woodward—Electric-light Plant and Water-works.—Woodward Water-Works & Electric-light Co. has been incorporated, with capital stock of \$50,000, by E. S. Wiggins, C. R. Alexander and John J. Gerlach.

#### BURNED.

Conway, Ark.—J. E. Little's cotton gin; loss \$4000.

McRae, Ga.—McRae Oil Fertilizer Co.'s plant; loss \$3000.

Natchez, Miss.—Holiday Fleming's cotton gin; loss \$7000.



Rogersville, Tenn.—E. H. Hale's furniture factory; estimated loss \$4000.  
 Rogersville, Tenn.—Rogersville electric light plant; estimated loss \$5000.  
 Shelbyville, Tenn.—Hopkins & Yoe's flour mill; loss \$16,000.  
 Smithville, Texas.—Royal Steam Laundry; loss \$1500.  
 Thomaston, Ga.—Dr. E. A. Flewellen's cotton gin.

### BUILDING NOTES.

Baltimore, Md.—Storage-house.—Hammond Ice Co., Ormond Hammond, president, has awarded contract to John A. Sheridan for erection of an ice storage-house with capacity for 10,000 tons; cost \$19,000.

Bay City, Texas.—Bank and Office Building.—J. Ledland, Victoria, Texas, will receive proposals until January 2 for erection of a two-story brick and stone bank and office building at Bay City for Henry Rugeley. Plans and specifications now on file. Bids must be accompanied by certified check for \$100. Bond for \$1500 required and usual rights reserved.

Birmingham, Ala.—Depot.—Southern Railway Co. will erect depot on site of its recent purchases in Birmingham. General Superintendent J. A. Dodson of Chattanooga, Tenn., has drawn the plans, and is receiving bids for erection of same. Frank S. Gannon is general manager, Washington, D. C.

Bristol, Va.—Norfolk & Western Railway Co. will erect union station at Bristol; L. E. Johnson, general manager, Roanoke, Va.

Bristol, Va.—Bank Building.—Dominion National Bank is having plans made for erection of a new building.

Charlotte, N. C.—Office Building.—Piedmont Realty Co. has awarded contract to Nicholas Itmer of Atlanta, Ga., at \$53,715 for erection of its proposed seven-story office building and theater. Finishing work, decorating, steam heating, elevator, etc., will cost \$10,000 additional.

Chickasha, I. T.—Business Building.—Whiteman Bros. will erect one-story brick building, with basement, which will have 18,000 square feet of floor space.

College Station, Texas.—Building.—Chairman building committee Agricultural and Mechanical College will receive competitive plans until January 24 for a chemical and veterinary laboratory building to cost \$26,000. Particular information furnished on application. Usual rights reserved.

Columbus, Miss.—City Hall.—City will probably erect new city hall; C. S. Lincoln, mayor.

Dallas, Texas.—Club Building.—Phoenix Club will erect a \$25,000 building. Address care of R. Liebman.

Denison, Texas.—Hotel.—Denison Hotel Co. (date reported) has received plans for conversion of a large building into a hotel; building is a four-story structure 75x120 feet; company also acquired two-story building 25x120 feet and two vacant lots adjoining. Contracts will soon be awarded for heating, plumbing, electric elevator, carpentry and brick work. G. L. Blackford is secretary.

Folkston, Ga.—Courthouse.—County will erect \$9000 courthouse. Address "County Commissioners."

Gonzales, Texas.—Theater.—Chartered; Gonzales Lyceum, with capital stock of \$29,000, for erection of the theater recently reported; incorporators, W. L. Gardien, J. B. Kennard, L. C. Brenner and others.

Houston, Texas.—Club Building.—Douglas A. Crawford has received contract for erection of the \$7000 building for the Concordia Club.

Kentwood, La.—Depot.—Illinois Central Railroad will rebuild its depot recently burned at Kentwood; station will comprise warehouse, waiting-room, passenger and freight depot; J. T. Harahan, second vice-president, Chicago, Ill.

Mobile, Ala.—Depot.—Mobile, Jackson & Kansas City Railroad Co. will, it is reported, erect a depot. F. B. Merrill is general manager.

Montgomery, Ala.—Roundhouse.—R. D. Cole Manufacturing Co. of Newnan, Ga., has contract for erection of the proposed \$35,000 roundhouse at Montgomery for the Western Railway of Alabama.

New Orleans, La.—Dwelling.—T. H. McCarthy is having plans made for erection of dwelling.

New Orleans, La.—Warehouse.—Charles Sykes, Nashville, Tenn., district manager Security Warehousing Co. of New York, states the report of his company building warehouse at New Orleans was erroneous,

but that it may operate several warehouses built in New Orleans under its plan.

Norfolk, Va.—Apartment-house.—It is reported that M. B. Crowell will erect a seven-story apartment-house to cost \$175,000.

Norfolk, Va.—Hotel.—It is said that a large hotel will be erected on property of J. W. Perry, corner Tazewell and Granby streets.

Oklahoma City, O. T.—Residence.—M. L. Turner has let contract to L. F. Lee for erection of modern dwelling to be heated by hot water.

San Marcos, Texas.—School.—Fisher & Lambie of Austin, Texas, have contract at \$39,400 for erection of Southwest Texas Normal School, previously reported.

Tampa, Fla.—Government Building.—J. K. Taylor, supervising architect, Washington, D. C., will open bids February 3 for construction of courthouse, custom-house and postoffice at Tampa. For copies of specifications address above or "Postmaster" at Tampa.

Vicksburg, Miss.—Bank Building.—Dr. E. T. Newell of St. Joseph, Mo., and brother will erect a bank building.

Washington, Ga.—Courthouse.—It is stated that plans and specifications of Frank P. Milburn of Columbia, S. C., have been accepted for proposed \$10,000 courthouse for Wilkes county, Ga. Contract will soon be awarded.

Wilmington, N. C.—Warehouse.—Seaboard Air Line, John Skelton Williams, president, Richmond, Va., will erect warehouse at Wilmington.

### RAILROAD CONSTRUCTION

#### Railways.

Albany, Ga.—C. W. Pidecock, vice-president of the Georgia Northern Railway Co., writes the Manufacturers' Record that the line is to be extended to Albany as soon as possible from the present terminus. The necessary equipment has been purchased.

Batesville, Ark.—It is reported that the Missouri Pacific Railroad Co., which is promoting the White River Railroad from Batesville to Buffalo City, has let contracts for part of the work on this section to Collett & Williamson and W. H. Dennison. The town authorities of Yellville have decided to donate the company the necessary land for terminals and right of way in the town. The extension will be sixty miles in length, and will penetrate the zinc territory of Northern Arkansas. Russell Harding at St. Louis, Mo., is vice-president of the company.

Charleston, W. Va.—The Midland Railway Co. has been chartered in West Virginia. It is reported, to build a line which will terminate at some point on tidewater. The incorporators include J. B. White of Charleston. It is stated that the West Virginia Central & Pittsburg Company is interested in the project.

Corsicana, Texas.—It is stated that the Houston & Texas Central Railroad Co. has completed arrangements to build its proposed extension between Corsicana and Palestine, an estimated distance of 100 miles. M. G. Howe at Houston is engineer.

Covington, Ga.—It is stated that the work of grading a spur of the Georgia Railroad from Covington to Oxford has begun, and that the line may be extended to Logansville, a distance of twenty-three miles, to connect with the Seaboard Air Line. Thomas K. Scott at Augusta, Ga., is general manager of the company.

Cumberland, Md.—Tracklaying has been completed upon the electric railroad between Cumberland and Frostburg, and it is expected to have a line in operation in a few days. The Penn State Construction Co. of Philadelphia is general contractor. J. W. Burchinal of Moundsville, W. Va., is one of the principal promoters.

Dodge, Texas.—Among those interested in the Trinity Valley Southern Railroad Co., recently organized to build from Dodge to Cold Springs, are E. J. Dupree and A. J. Bedford, all of Oakhurst, Texas. The road will be twenty miles in length, if built.

Dublin, Ga.—The extension of the Macon, Dublin & Savannah Railroad to Vidalia is nearly completed, and it is expected to be in operation within the next thirty days. James T. Wright at Macon is president of the company.

Elkton, Md.—A report is current that H. A. Richardson of Dover, Del., and Hon. Tom L. Johnson of Cleveland, Ohio, have become interested in a plan to build an electric line in Delaware and Eastern Maryland.

Hornersville, Mo.—W. C. Hasty, president of the Paragould Southeastern Railway Co., confirms the report in the Manufacturers' Record that this line is to be extended from

Hornersville to Blytheville, Ark., a distance of about fifteen miles. The Dalhoff Construction Co. of Little Rock, Ark., has secured the contracts, and the work is now in progress. It is expected to complete the extension by April 1, if not sooner.

Johnson City, Tenn.—Hon. W. P. Brownlow, who is interested in the proposed electric line between Johnson City and Jonesboro, informs the Manufacturers' Record that several promoters have been investigating the proposition, and it is believed that the line will be constructed during the coming year. Mr. Brownlow may be addressed at Washington, D. C.

Lexington, Ky.—The Bluegrass Consolidated Traction Co. has secured another franchise to build a portion of its system between Versailles and Lexington. Hon. M. C. Alford of Lexington is one of the principal promoters.

Little Rock, Ark.—L. M. Wise is president, and Z. Ward, vice-president, of the Mississippi Valley Construction Co., recently incorporated in Arkansas for railroad promotion project.

McComb City, Miss.—It is stated that parties from Toledo, Ohio, have become interested in a plan to build an electric railroad between McComb City, Fernwood and Summit, and that a company may be organized with \$250,000 capital stock to take up the project. C. V. Ratcliffe of Summit, Miss., has become interested in the matter.

Moundsville, W. Va.—W. F. Crow of Cameron, W. Va., is interested in a railroad proposed between Moundsville and Waynesburg, and a company has been formed under the title of the Moundsville & Waynesburg Railroad Co. A road used for lumbering purposes, now in operation, will form a part of the line.

Muskogee, I. T.—E. C. Hughes, vice-president of the Ozark & Cherokee Central Railway Co., writes the Manufacturers' Record that surveys have been made for the proposed line between Muskogee and Shawnee, also for a branch to Guthrie, Okla. It is expected to build the new mileage during 1902. The Kenefick Construction Co. of Kansas City has the contracts.

New Orleans, La.—A report in connection with the New Orleans & Mississippi Midland Railroad is to the effect that the company has been chartered in the interest of the St. Louis & San Francisco Company, which proposes securing a Southern outlet to terminate at New Orleans by means of the proposed line. Gustav Lehman at New Orleans is secretary of the New Orleans Company.

Okolona, Miss.—A report is current that the Southern Railway Co. is considering the construction of a railroad from Okolona to Winona, which will connect the Mobile & Ohio and the Georgia Pacific divisions. The estimated distance is seventy miles. W. H. Wells at Washington is engineer.

Orange, Texas.—The Orange & Northwestern Railroad Co. has authorized the amendment of its charter, providing for an extension to Corsicana, and surveys are to be made immediately. The estimated distance is 200 miles. John W. Maxey of Houston, Texas, is chief engineer. The road has been placed in operation between Orange and Buna, Texas, a distance of thirty miles.

Portsmouth, Va.—The Elizabeth City Railroad Co. has applied for legislative authority to construct a railroad from a point in the suburbs of Portsmouth to a point on the Elizabeth river. Among those reported as interested are Alfred P. Thom and C. R. Johnson.

Raleigh, N. C.—A plan is under way to construct a railroad from Raleigh to Wakefield, N. C., by way of Wilson. J. M. Turner is reported as one of the promoters of the enterprise.

San Augustine, Texas.—Surveys are being completed in the interest of the Gulf, Colorado & Santa Fe system with a view to completing it to San Augustine, as originally intended. C. F. W. Felt at Galveston is chief engineer.

Savannah, Ga.—A plan to complete a railroad from Chattanooga, Tenn., to Savannah will probably be agitated in the Georgia legislature, the scheme being to employ the State convicts in this work. The Western & Atlantic Railroad would be used as a part of the system.

Sheffield, Ala.—A report is current that the Louisville & Nashville Railroad Co. has under consideration an extension from Sheffield south to the line being built in the vicinity of Selma, Ala. R. Montfort at Louisville, Ky., is chief engineer.

Upper Marlboro, Md.—The Chesapeake Beach Railroad Co. has decided to construct an extra track about six miles long, and it is understood has given a contract to L. P.

Allen of Philadelphia to do the work. Otto Mears, 1420 New York avenue, Washington, is president and general manager of the company.

Vicksburg, Miss.—It is announced that final surveys have been completed for the Birmingham & Vicksburg Railroad, and that the estimated cost, as well as maps of the route, have been completed with the view to letting contracts in the near future. D. Levy at Vicksburg is secretary of the company.

Waco, Texas.—Hugh Burns has secured a contract to construct a portion of the International & Great Northern Railroad extension from Waco to Fort Worth, a distance of ninety-six miles. Mr. Burns may be addressed at Waco.

Washington, D. C.—The latest report concerning the Washington, Annapolis & Baltimore Electric Railroad is to the effect that construction is to begin upon the line early in January, connecting the cities of Washington and Baltimore first. A branch to Annapolis is proposed from a point near Odenton. James Christy of Washington is general manager of the promoting company.

Waxahatchie, Texas.—A plan is under way to construct an electric railroad between Waxahatchie and Ennis, a distance of fifteen miles. It is understood that local business men are interested in it.

Westminster, Md.—Mr. Jas. B. Colegrove, president of the Washington, Westminster & Gettysburg Railroad Co., informs the Manufacturers' Record that grading is to begin in a few days. The line will extend from Rockville to Gettysburg by way of Mount Airy, Westminster and Littlestown, and will be seventy-five miles in length. The Baltimore & Ohio Railroad will be used from Rockville to Washington for train service. The offices of the Washington, Westminster & Gettysburg Company are at 20 Broad street, New York.

Wheeling, W. Va.—H. A. Garfield, one of the promoters of the Lake Erie, Alliance & Wheeling Railroad Co., writes the Manufacturers' Record that the company will control the Alliance & Northern, the Ohio River & Lake Erie and the Wheeling & Cleveland roads. The Wheeling & Cleveland line is to be completed to a point on the Ohio river opposite Wheeling. The road, when completed, will extend to Fairport Harbor, on Lake Erie. Mr. Garfield may be addressed at Cleveland, Ohio.

Wilmington, N. C.—It is reported that John Barry of Wilmington has secured a contract to grade the proposed railroad between Wilmington and Southport, in which Northern parties are interested.

#### Street Railways.

El Reno, Okla.—George W. Bellamy and others have organized the El Reno Power & Street Railway Co., with \$50,000 capital stock.

Oklahoma City, Okla.—Edmond Harrison of New York and A. H. Craven of St. Louis are interested in a company which has secured a franchise to build an electric street railway in the city. Chas. S. Bouton is the local representative of the company.

### Machinery, Proposals and Supplies Wanted.

Manufacturers and others in need of machinery of any kind are requested to consult our advertising columns, and if they cannot find just what they wish, if they will send us particulars as to the kind of machinery needed we will make their wants known free of cost, and in this way secure the attention of machinery manufacturers throughout the country. The MANUFACTURERS' RECORD has received during the week the following particulars as to machinery that is wanted.

Belting and Shafting.—T. H. Nance, Talladega, Ala., is in the market for three-eighths round leather belting and three-quarters ordinary cold-rolled steel shafting cut to short lengths.

Boiler and Engine.—Barton & Jeffery, Suffolk, Va., will need engine and boiler of sixty to eighty horse-power.

Boiler and Engines.—L. E. Miller, 12 Main street, Houston, Texas, is in the market for second-hand 10x24-inch Corliss engine, 40 or 50-horse-power high-speed self-oiling automatic engine and 60 or 70-horse-power vertical or Scotch marine boiler.

Brick Machinery.—G. F. Finger, Lakeland, Fla., wants prices on brick machinery with capacity for 10,000 to 12,000 per day.

Bridge.—H. L. Wheeler, special commissioner, Beattyville, Ky., will open bids Jan-

uary 6 for erection of an iron bridge, four spans, ninety-five feet each, and approaches. Masonry completed. Usual rights reserved.

Bridge.—W. T. Hamrick, clerk county court, Clay, W. Va., will open bids January 20 for construction of a bridge across Elk river. Specifications and general plans can be seen at office of county attorney, county clerk's office or office of M. W. Venable, 55 Capital street, Charleston, W. Va. Usual rights reserved.

Bridges, etc.—John W. Maxey, consulting engineer, Houston, Texas, will open bids January 2 for construction of pile foundations, bulkhead, flumes, bridges, concrete and brick masonry work for one or more power-houses near Crosby, Texas. Forms of proposals, copies of specifications and full instructions to contractors may be seen at Mr. Maxey's office. Certified check for \$500 must accompany each bid. Crosby Canal Co. reserves right to reject any or all bids.

Building Materials.—J. W. Gannon, civil engineer, Montgomery, Ala., wants bids on an inside tile and granitoid work for passenger depot; also see "Roundhouse Equipment."

Canal Levees.—John W. Maxey, consulting engineer, Houston, Texas, will open bids January 2 for constructing a system of canal levees near Crosby, Texas; approximate quantity 250,000 cubic yards, all borrow and waste. Forms of proposals, plans, profiles, copies of specifications and instructions to bidders may be seen at Mr. Maxey's office. Bids must be accompanied by certified check for \$1000. Crosby Canal Co. reserves usual rights.

Cornmeal Mill.—Barton & Jeffery, Suffolk, Va., want full equipment for cornmeal and feed mill of 1000 bushels per day capacity, including storage tanks, boilers, engines or motors.

Dredging Shovel.—See "Pump."

Electrical Machinery.—Barton & Jeffery, Suffolk, Va., will probably need motors of fifty horse-power.

Elevator.—White Oak Furniture Co., Mebane, N. C., wants a belt-power elevator, platform 6x7 feet, capacity 2500 to 3000 pounds.

Engine.—See "Flour-mill Machinery."

Excelsior Machinery.—W. J. Craut, Vigor, Va., wants addresses of manufacturers of excelsior machinery.

Flour-mill Machinery.—Fielding Bros., Bentonville, Va., will want bids on machinery for 50-barrel flour mill, including engine.

Ice Plant.—Ellisville Ice & Cold Storage Co., Ellisville, Miss., is soliciting machinery proposals on anhydrous ammonia (compression) system.

Knitting Machinery.—A. T. Stocks, Gadsden, Ala., wants information and prices on knitting machinery.

Logging Engine.—June Bros., Hammond, La., want to correspond with manufacturers of traction engines for hauling logs.

Lubricating factory Equipment.—Kentucky Consumers' Oil Co., Louisville, Ky., will soon be in the market for storage tanks, especially second-hand; compounders' kettles and fittings, cylinder and engine, oil stocks, black oils and residuums in tank cars, etc.

Match Machinery.—R. H. Alvarez, Port Arthur, Texas, wants to correspond with manufacturers of machinery for making matches.

Oil Mill.—Cleveland Milling Co., Cleveland, Tenn., wants information regarding establishment of cottonseed-oil mill, including necessary machinery, capital required, etc.

Potteries.—John F. Beckwith, Franklin, Tenn., wants addresses of potteries or handlers of material for potteries.

Pump.—Louis B. Holzknicht, Middle River, Md., wants to rent or purchase a suction pump to pump mud from bottom of river; also a scoop shovel of from four to eight feet wide.

Pumping Plant.—John W. Maxey, consulting engineer, Houston, Texas, will open bids January 2 for delivery and erection of a rice irrigating power pumping plant near Crosby, Texas, guaranteed to lift 70,000 gallons of water per minute through a lift of sixty-five feet. Bids will be received both on a single continuous lift of sixty-five feet and through two lifts of thirty-two feet six inches each. Forms of proposals, copies of specifications and full instructions may be obtained from Mr. Maxey. Each bid must be accompanied by certified check for \$500. Crosby Canal Co. reserves right to reject any or all bids.

Railway Equipment.—See "Steel Work."

Railway Equipment.—See "Logging Engine."

Railway Equipment.—Hyman Supply Co., New Berne, N. C., is in the market for about two miles of 30-pound steel rail delivered in New Berne.

Railway Equipment.—Jas. T. Wright, Alexandria, La., wants two and a-half miles of T iron rails and a light standard-gauge railroad locomotive, new or second-hand.

Roundhouse Equipment.—J. W. Gannon, civil engineer, Montgomery, Ala., is in the market for twenty terra-cotta composition smoke-jacks for new roundhouse.

Sewers.—John McMinn, mayor, Brownwood, Texas, will open bids January 1 for construction of about 9000 feet of sewer. Certified check for \$100 must accompany each bid. Plans and specifications on file. Usual rights reserved.

Shafting.—See "Belting."

Steel Work.—Peacock's Iron Works, Selma, Ala., is in the market for a carload of four and five-inch steel channels, five-and-one-quarter and six-and-one-half-pound sections, respectively.

Steel Work.—Mordcaid T. Endicott, chief bureau of yards and docks, Navy Department, Washington, D. C., will open bids January 11 for furnishing and erecting steel work for storehouse 40x98 feet at navy-yard. Estimated cost \$3000. Plans and specifications can be seen at bureau, or will be furnished by the commandant, navy-yard.

Timber.—Proposals will be received until January 13 at United States Engineer Office, Charleston, W. Va., for supplying 47,577 feet B. M. white oak timber at locks 4, 5 and 6, Great Kanawha river. For blank forms apply as above, or at Room 415, Custom-House, Cincinnati, Ohio, to Major E. H. Ruffner, engineer.

Tobacco Machinery.—Dixie Tobacco Co., Bedford City, Va., is in the market for machinery to manufacture cigars, cheroots, tobacco, etc.

Traction Engine.—See "Engine."

Well-boring.—Bay City Oil & Development Co., care of Jake Markstein, Royal and Dauphin streets, Mobile, Ala., wants bids for boring oil well 2000 or 2200 feet, with 12-inch, nine-inch and six-inch pipe, boring with combination and rotary machine.

Woodworking Machinery.—R. L. Carpenter, Casar, N. C., will purchase machinery for sash, doors, blinds, etc.

Woodworking Machinery.—Kirkland Lumber Co., A. Kirkland, president, Tampa, Fla., wants to correspond with manufacturers of machinery for making cigar boxes; wants machinery prices and full information.

## TRADE NOTES.

New Water-Works Plant.—Messrs. Alber & Byrne, the well-known engineers of Birmingham, Ala., are preparing plans and specifications for a water-works plant to be erected at Blocton, Ala. It is expected to begin construction in a few weeks.

Business Opportunity.—In another column will be found an opportunity to purchase a furniture and sewing-machine business with a three-year lease of the building. P. G. Edmonds, Box 618, Montgomery, Ala., will be pleased to give further particulars.

All the Way to Asia.—Two very large Cross Oil Filters were recently shipped by the Burt Manufacturing Co. of Akron, Ohio, to Smyrna, Asia Minor. The sale of the filter has extended to twenty-eight different countries, which is a good evidence of its merits.

Obliged to Enlarge.—The Park Manufacturing Co., Charlotte, N. C., reports business as very brisk, and it has outgrown its present quarters, making it necessary to put up an addition to the plant. The new building is 40x30 feet in dimensions, and three stories high.

Industrial Investment.—An advertisement calling attention to an opportunity to place bonds to finance a woolen mill in North Carolina will be found in another column. By corresponding with "Bonds," care of Manufacturers' Record, full particulars may be obtained.

Order from the Government.—The American Steam Gauge & Valve Manufacturing Co., Boston, has added another to the list of naval vessels carrying its equipment, the torpedo-boat destroyer No. 34, the "Tingey," built by the Columbian Iron Works & Dry-Dock Co., Baltimore, being the latest.

A Special Car.—F. M. Hicks of the Hicks Locomotive and Car Works of Chicago is constructing a special car for the Wallace Bros. Circus, which is eighty feet in length. It will contain six staterooms, kitchen, etc., and will be used as a home-on-wheels car for the company. Messrs. W. E. Kelly & Co. have recently purchased from Mr. Hicks a switch and logging engine for immediate delivery.

They Are Pushers.—Manufacturers of steam and water power supplies desiring to push their products in Maryland and the Virginias would do well to place their lines with Coggins & MacBryde, manufacturers' agents, 407 Continental Trust Building, Baltimore, who can be relied upon to push any lines they handle to advantage.

Eastern Representatives.—M. A. Hudson and H. S. Whitney, formerly connected with one of the largest machinery supply houses in New York, are representing in New York and vicinity the Standard Gauge Manufacturing Co., Syracuse, N. Y.; J. E. Loneragan & Co., Philadelphia, Pa., and the Penberthy Injector Co., Detroit, Mich. They have offices at 141 Broadway.

An Important Addition.—The Charleston Lead Works of Charleston, S. C., has decided to add to its plant machinery for manufacturing sheet lead and lead pipe, also for manufacturing excelsior mattresses and brooms. The company finds an excellent opportunity to sell lead in the forms referred to, also mattresses and brooms, and announces that it will buy old lead or exchange for new goods.

Real Estate and Timber.—The announcement of Messrs. Wm. Polk & Co. in the advertising columns will be of special interest to investors in the South, as this firm makes a specialty of dealing in and managing real estate, timber lands being a feature of its business. It will be pleased to correspond with Northern capitalists and others who may desire to investigate opportunities in the South. It may be addressed at its office in the First National Bank Building, Alexandria, La.

Best Quality at Least Cost.—H. G. Barr & Co., Worcester, Mass., carry in stock one of the largest lines of sensitive drilling machines in the country, comprising sixteen distinct styles. At the present time they report business good. They have drills in stock for immediate delivery, such as two-spindle, four-spindle and three styles of single-spindle drills. Others are also on the floor. It will pay to write them for prices if one wants the best tools for the least money. They warrant all of their apparatus—another proof of its quality.

Orders from Abroad.—The Noryke & Marmon Co. of Indianapolis, Ind., has been remarkably successful in securing important orders from foreign customers, as is indicated by recent contracts which it has made. These include a 50-barrel swing-sifter mill for Sonora, Mexico; a 50-barrel mill for Nueva-Leon, Mexico; a 30-barrel mill for Sinaloa in the Republic, and machinery for a mill in Belgium and new equipment for a plant at Chatham, Ont. The company's American business continues to be of extensive proportions, as orders are coming literally from all parts of the United States.

Tests of Efficiency.—At the Worcester (Mass.) Polytechnic Institute tests have been made of the power-transmitting properties of various pulleys, also of loom clutches. The results of the tests show that what is known as the Compo clutch, manufactured by the Crompton & Knowles Loom Works of Worcester, gave the best service and transmitted about double the power of the other clutch tested. In the pulley trials the Compo pulley was found to carry more load than the others, and showed a marked increase in power-transmitting capacity over the plain pulley. The Compo pulley is manufactured by the Allston Foundry Co. of Boston.

As Busy as Ever.—Recent orders secured by the York Manufacturing Co. of York, Pa., for its noted ice and refrigerating machinery indicates that this mechanism is as popular as ever, and that the demand covers every portion of the United States. Some recent orders are for the Lyon Brewery of New Haven, Conn.; the Avoyelles Ice Co. of Mansura, La.; the Parkersburg Ice Co. of Parkersburg, W. Va.; the Harrisburg Water, Light & Power Co. of Harrisburg, Ill.; Messrs. Kretz & Galzenleuchter of Gallon, Ohio; Ropkins & Co. of Hartford, Conn.; the Valley Ice & Supply Co. of Sharpsburg, Pa.; E. M. & A. B. Willis of Washington, D. C.; the People's Ice Co. of Augusta, Ga.; the Radford Ice Co. of Radford, Va.; C. F. L. Engle of New York city; Fell Brewing Co. of Carbondale, Pa.; the Natchez Ice Co. of Natchez, Miss.; the Independent Ice Co. of Wilmington, N. C., and the Hoehl Brewing Co. of Bennett, Pa. The York Company will open the year 1902 with most flattering prospects from a business standpoint.

An Important Announcement.—The announcement is made that the H. W. Johns Manufacturing Co. of 100 William street, New York, and the Manville Covering Co. of

Milwaukee have consolidated their interests, and a new company will assume charge on January 1. It is to be known as the H. W. Johns-Manville Company, and capitalized at \$3,000,000. The officers of the new company will be Mr. T. F. Manville, president; Mr. C. B. Manville, vice-president; Mr. George W. Gladwin, vice-president; Mr. F. R. Boocock, treasurer, and Mr. H. E. Manville, secretary. Mr. James G. Cannon will be chairman of the board of directors. Mr. C. R. Manville will be manager of the Western department, and with Mr. C. B. Manville will remain in Milwaukee. Mr. T. F. Manville and Mr. H. E. Manville will remove to New York. The new company is rapidly completing a plant at Milwaukee for the manufacture of carbonate of magnesia and mineral wool. When this plant is completed the company will be prepared to furnish a complete line of all grades of steam pipe and boiler coverings and asbestos goods of all descriptions.

Badger's Standard Fire Extinguisher.—The necessity of a fire extinguisher simple in construction and operation, as well as reliable, is appreciated by hotel men, manufacturers and owners of property in general. The E. B. Badger Sons Co. of Boston appears to have perfected a device of this kind which fills every reasonable requirement. The claims for Badger's Standard fire extinguisher are simplicity of construction, quickness of operation, no parts to be lost or misplaced, and the regulation of feed. It is constructed of heavy rolled copper coated on the inside, so that it is absolutely acidproof and free from corrosion. The acid bottle is held in a cage attached to the neck of the machine, and is removed simply by lifting it out of the cage. The operation removes the cover by the ring handle provided, allowing the acid bottle to be removed and placed immediately. In regulating the flow of the acid it becomes neutralized when discharged from the machine, thereby doing no damage to whatever it comes in contact with. A feature of the regulated feed is that one can invert the machine a number of times without recharging and get a chemical action each time. The hose is detachable by a swedge coupling. This is a great improvement over the old method.

A Strong Combination.—This statement can truly be made relative to the Alberger Condenser Co., which has recently been organized to manufacture condensing apparatus, vacuum pumping machinery and cooling towers. The officers of the company, which has its headquarters at 95 Liberty street, New York, are widely and favorably known in connection with the apparatus which it proposes manufacturing. Mr. Louis R. Alberger, the president, was for thirteen years in charge of the condenser department of the firm of Henry R. Worthington of New York. Mr. Geo. Q. Palmer, the vice-president, is also manager of the Quintard Iron Works, a plant that has an international reputation. Mr. B. W. Pierson, secretary and treasurer, as well as Mr. D. H. Chester and Mr. Geo. P. Symonds, have been associated with Henry R. Worthington for a period of years. Consequently, the personnel of the company guarantees that the machinery it proposes manufacturing will be of the highest standard. It is designed especially to meet exacting demands and to attain the most economical performance, especially in connection with electric-lighting and power stations, steel mills and blast furnaces. The vacuum apparatus is especially adapted for sugar-houses, glue and glycerine works and milk-condensing factories, while the company will be prepared to construct surface and jet condensers of all kinds, with air and circulating pumps.

The Nernst Lamp.—Electricians and other experts have been much interested in a paper prepared by Alexander Jay Wurts, presented at the American Institute of Electrical Engineers when this body was in session at Buffalo. It gave an elaborate description of the Nernst lamp in America and its really remarkable qualities. It is applicable to indoor and outdoor illumination, and the American company has made a series of sizes ranging from 50 to 2000 candle-power. A 50-candle-power lamp represents 130 volts and the 2000 candle-power 220 volts, the latter containing thirty glowers. The glower, which is one of the interesting features of the apparatus, is manufactured from a combination of earths mixed into a sort of dough. A substance like porcelain is the result of the mixture, which is cut into convenient lengths to light and roasted. To the lengths are attached lead wires. When the current is applied the glower gives out a remarkably intense yet soft illumination, which is excellently adapted for reading and other indoor occupations, while for such illumination it serves a remarkably large area. Apparently it marks a revolution in



electric lighting. The lamp was tested at the Pan-American Exposition, where the Nernst Lamp Co. lighted the interior of the dome of the Electricity Building by a series of ninety-two six-glowers lamps suspended from a chandelier. The display attracted widespread attention, and contributed largely to the splendor of the night scene at Buffalo. At the company's works in East Pittsburg, Pa., a number of lamps of various sizes have been placed in service out of doors, and the results show that they are not only extremely reliable, but combine economy and durability. Although the Nernst lamp has already achieved quite an American reputation, it was not introduced into this country until 1898, and as yet the manufacture of the lamps in America can be called an infant industry.

### TRADE LITERATURE.

**Continually in Mind.**—In sending out its calendar for 1902 the Henry Martin Brick Machine Manufacturing Co. of Lancaster, Pa., believes in keeping its apparatus in the mind of its customers, for the calendar is illustrated with some of the machinery which has achieved for the company such a wide reputation.

**A Valuable List.**—Dockham's Jobbing Trade Report and Directory for 1902 has been issued, and contains the names of over 2000 jobbers arranged alphabetically, with addresses. The list is almost indispensable to those dealing with the jobbing trade in general. It is published by Messrs. Stevens, Dockham & Co., 131 Devonshire street, Boston.

**For 1902.**—The Dowman Manufacturing Co. of Atlanta, Ga., the widely-known maker of sheet metal in various forms, has been fortunate in designing a calendar which will attract widespread attention on account of its genuine merit. The calendar is of convenient size, illustrated in a variety of colors, and is a credit to the company which has issued it.

**"Wolfprints."**—The December number of this little magazine, published by the Wolf Company of Chambersburg, Pa., not only refers to the flour-mill machinery manufactured by the company, but contains some interesting historical data. The title page is appropriate to the season, representing a wolf attired at "St. Nicholas" with a generous load of toys.

**Simple Electric Locomotives.**—A pamphlet issued by the C. W. Hunt Co. of West New Brighton, N. Y., treats of electric locomotives which it supplies for factories. The locomotives have the merit of being very simple in construction, yet are powerful enough to handle loads of various weights up grades where steam-power would be a failure. The pamphlet is illustrated with cuts showing different sizes.

**A Valuable Device.**—A card recently issued by the Draper Company of Hopedale, Mass., illustrates and describes the band tension scales manufactured especially for textile plants. The scales have found high favor with those who have used them. Incidentally the card refers to the Watters attachment used on banding machines, and contains some hints on banding which will be appreciated by manufacturers generally.

**A Sporting Calendar.**—Golf lovers will be especially interested in the calendar for 1902 issued by the Lesley & Trinkle Company, South Fifteenth street, Philadelphia, as it is very typical of the sport. The representation of a golf girl is exceedingly life-like, while a stick actually made of wood and metal and a ball lying on the green are very realistic portions of the calendar. The publishers call it a "score book"—a very appropriate title.

**The December Mechanic.**—The issue of the Mechanic for December, as might be expected, contains a number of articles especially interesting to woodworkers, including a lesson in designing for furniture-workers, also a continuation of Mr. W. H. Wakeman's description of a power plant for a wood-working establishment. One of the interesting features of the number is a description and illustration of a six-inch molding machine made by the H. B. Smith Machine Co. of Smithville, N. J. As is well known, the Mechanic is published by this concern.

**"Built for Business."**—The remarkable diversity of uses for gas and gasoline engines is well known to manufacturers and machinists generally. This form of mechanism is so compact and so economical in operation that it has found wide favor. The Pierce-Crouch Engine Co. of New Brighton, Pa., announces that its Brighton gas and gasoline

engines are "built for business." The Pierce-Crouch engine is a very formidable competitor to other types, representing, as it does, a combination of valuable features, which are described in the latest catalogue issued by the company.

**Of a High Order.**—Messrs. I. B. Williams & Sons of Dover, N. H., the well-known manufacturers of leather belting and lace leather, have sent their patrons a calendar for 1902 which is of a very high order of merit—like the Williams products. The calendar depicts a female face in a very harmonious combination of colors, and the tints are unusually natural. The date portion is not too prominent, consequently the illustrated feature is not marred, as is often the case in advertisements of this kind. Messrs. Williams & Sons are to be congratulated on the extremely artistic production which they have placed before their customers for 1902.

**Holes in the Ground.**—The widespread oil territory now known to exist in the United States, as well as the demand for irrigation, causes machinery for making holes in the ground to form an unusually interesting subject. That it is appreciated by Messrs. Loomis & Nyman of Tiffin, Ohio, is evidenced by the publication of their catalogue F, which details the celebrated Loomis well-drilling and prospecting machinery for oil and water. The best proof of the merits of the Loomis apparatus is its use in nearly all parts of the United States. Considering the results attained, it is low in price and comparatively simple in character, but the parts are made with a view to strength and durability. The catalogue is illustrated with half-tones and drawings which give an excellent idea of the variety of work to which this mechanism is suited.

**The "Red Book."**—It is hardly necessary to explain what the "Red Book" means to metal workers, machinists, and, in fact, manufacturers generally. Published by Messrs. Merchant & Co. of Philadelphia under this title, it is known as the yearly illustrated catalogue of the extensive variety of the products Merchant & Co. offer the trade. Although condensed into convenient form, it is practically a trade encyclopedia on the subject of material of a high grade. A few of the subjects with which it deals are block tin in various forms, stove parts, brass and bronze, copper, electrolyte metal, German silver in rods, tubes, sheets and wires, hooks for all purposes, metal lathing, machinery for roofing purposes, as well as sheet-iron work, oil and paint, roofing papers, pipe, sheet metal of various kinds, tubing, ventilators and zinc. Those who have used the "Red Book" are glad to receive it yearly, as the various sizes and prices of each specialty carried by Merchant & Co. are given in connection with the description. The business of this firm covers the whole country, for the reason that it prides itself on the quality of goods offered and prompt attention to orders. Messrs. Merchant & Co. will be glad to send detailed information relative to any particular kind of material required by patrons on application.

**An Elaborate Work.**—The great variety of machinery manufactured by the J. A. Fay & Egan Co. of Cincinnati requires a mass of descriptive matter, which makes it no small task to intelligently describe the various devices, and in a form convenient to the reader. The catalogue—if it can be called such—which the company has issued for 1902 gives an idea of the amount of compilation required, yet it is of convenient size, while fully detailing the merits of the various apparatus. It comprises no less than 440 pages, including the index. The latter in itself represents seven pages, and gives the titles of the hundreds of machines manufactured for woodworking purposes. The Fay & Egan Company claims to be the largest manufacturer of such specialties in the world, and, judging from the book referred to, the claim is well sustained. In studying its pages the expert will appreciate the wonderful progress which has been made in sawing, planing, molding, boring and other machinery. The United States is selling mechanism of this kind throughout the world, and exporters are really under obligations to the Fay & Egan Company, which has been among the foremost in advertising the merits of American machinery in the foreign market. An interesting feature of the catalogue is a reproduction of the medals received at expositions held at different points on the globe. That these medals were deserved is shown by the branch houses which the company has been compelled to establish to meet trade demands in London, Germany, Holland, Denmark, Sweden, Italy, Australia, Mexico, Japan, India and China, in addition to representatives in all the principal cities of this country.

### FINANCIAL NEWS.

The Manufacturers' Record invites information about Southern financial matters, items of news about new institutions, dividends declared, securities to be issued, openings for new banks, and general discussions of financial subjects bearing upon Southern matters.

#### New Corporations.

J. F. Monk is interested in the First National Bank being organized at Moultrie, Ga.

A dispatch from Columbus, Miss., states that a bank is being organized in that town with \$50,000 capital stock.

Louis S. Dolman and others have organized the Home Building and Loan Association at Lawton, Okla., with \$500,000 capital stock.

The Kentucky Loan & Investment Co. has been chartered at Louisville. Among those interested is J. H. Kennedy of Hot Springs, Ark.

A. B. Dunlap and W. J. Smith are interested in the First National Bank being organized at Mill Creek, I. T., with \$25,000 capital stock.

Arrangements have been made to organize a national bank at Friendsville, Md., with \$25,000 capital stock, by W. W. Savage and others.

The Oklahoma Loan Co., organized at Waxahachie, Texas, has elected D. F. Singleton of Shawnee, Okla., president and general manager.

The People's Bank has been chartered to begin business at Evergreen, Ala., with \$50,000 capital stock. Among those interested are C. P. Deming and A. Cunningham.

The Germania Trust Co., recently organized at St. Louis, is capitalized at \$2,000,000. Among those interested are Cyrus T. Blanke and M. R. Orthwein of St. Louis.

The Trust Company of West Virginia, recently organized at Elkins, has begun business in the building specially constructed for it. The Randolph County Bank at Elkins has also secured new quarters at Elkins.

E. B. White of Leesburg, Va., has been elected president; Albert Fletcher, Jr., vice-president, and Hunter Tiffany, cashier, of the Fauquier National Bank, recently organized at Warrenton, Va., with \$50,000 capital stock.

#### New Securities.

The Southern Loan & Trust Co. of Greensboro, N. C., has increased its capital from \$25,000 to \$100,000.

Messrs. F. M. Stafford & Co. have purchased the issue of electric-light bonds of New Berne, N. C., paying 108½.

The Dominion National Bank of Bristol, Tenn., has bought \$2500 in 6 per cent. bonds of the school district of Rogersville, Tenn.

The city of Dallas, Texas, will vote January 14 to decide the question of issuing \$50,000 in improvement bonds. Address the mayor.

A bill is pending in the Virginia legislature authorizing the city of Roanoke, Va., to issue bonds for various purposes. The mayor may be addressed.

T. Wolf, Jr., secretary, will receive bids until January 14 for the issue of \$18,000 in 4 per cent. bonds of New Orleans, La., issued by the board of liquidation.

The issue of \$18,000 in improvement bonds of Starke, Fla., remains unsold, and may be again offered investors. The board of trustees may be addressed.

Messrs. Rudolph Kleybolte & Co. of Cincinnati have purchased the issue of \$40,000 in improvement bonds of the city of Florence, S. C., paying a premium of \$7500.

The issue of bonds to be placed on the market by the city of Huntsville, Ala.,

### TABLE OF CONTENTS.

EDITORIAL:	Page.
A Striking Claim for Cheap Power.....	389
How Mr. French Helps Southern Boys.....	389
The South's Coal Supply.....	389
Mistaken Philanthropy.....	389
Georgia's Good Investment.....	389
For the Common Good.....	389
A Field Ripe to Practical Educational Harvest.....	390
The Southern Farm Magazine.....	390
Bark-Extract Location Wanted.....	391
Free Sites Offered.....	391
For a Woolen Mill.....	391
Coal Trade of the South This Year.....	391
For Oyster Planting.....	392
Ultimate Value of Texas Petroleum.....	393
Oil a Revolutionizer.....	393
Oil Notes.....	393
Copper and Gold.....	393
Fayetteville's Outlook.....	393
Improvements at Elkins.....	394
Opelika Enterprises.....	394
For All Vessels to Use.....	394
For Training Abroad.....	394
South Carolina Industries.....	394
Mississippi River Traffic.....	394
Virginia Shipbuilding.....	394
Literary Notes.....	394
General Notes.....	395
RAILROADS:	
Gulf & Ship Island.....	395
Palatial Southern Train Service.....	395
Extend to Corsicana.....	395
Aggregate Railroad Earnings.....	395
Mobile, Jackson & Kansas City.....	395
Line to New Orleans.....	395
More Rolling Stock.....	395
Rails from Europe.....	395
Union Depot at Mobile.....	395
Washington to Gettysburg.....	395
Railroad Notes.....	395
FOREIGN TRADE:	
Foreign Market Hints.....	396
Port Arthur and Europe.....	396
Notes.....	396
TEXTILES:	
Williamston (S. C.) Mills.....	396
Mills of Mexico.....	396
A \$100,000 Cotton Mill.....	396
The Cotton Movement.....	396
Textile Notes.....	396
Cottonseed-Oil Notes.....	397
LUMBER:	
Lumber Market Reviews:	
Baltimore.....	397
Charleston.....	397
Savannah.....	397
Brunswick.....	397
Mobile.....	397
Beaumont.....	397
Lumber Combination.....	398
Lumber Notes.....	398
PHOSPHATES:	
Phosphate Markets.....	398
Phosphate and Fertilizer Notes.....	398
MECHANICAL:	
The Vermont Farm Machine Co. (Illus.).....	399
Improved Belt Tripper (Illus.).....	399
CONSTRUCTION DEPARTMENT:	
New Enterprises.....	400
Building Notes.....	402
Railroad Construction.....	402
Machinery Wanted.....	402
Trade Notes.....	403
Trade Literature.....	404
FINANCIAL NEWS:	
New Corporations.....	404
New Securities.....	404

amounts to \$40,000, and will bear 5 per cent. interest. Bids will be received until January 7.

The city authorities of Greensboro, N. C., have decided to sell the issue of \$130,000 in 5 per cent. bonds at 112.17 as the minimum figure. The mayor will give further particulars.

Rockbridge county, Virginia, will probably place on the market an issue of \$171,000 in refunding bonds if it secures legislative authority. The board of county commissioners may be addressed at Lexington, Va.

P. J. Byrnes, mayor, informs the Manufacturers' Record that the city of Muskogee, I. T., has voted in favor of issuing \$175,000 in bonds for improvements. They will probably be placed on the market in the near future.

Messrs. Hambleton & Co. of Baltimore, representing a syndicate, have purchased the issue of \$1,000,000 in city securities known as the Western Maryland refunding loan, at 112.425. The securities bear interest at the rate of 3½ per cent.

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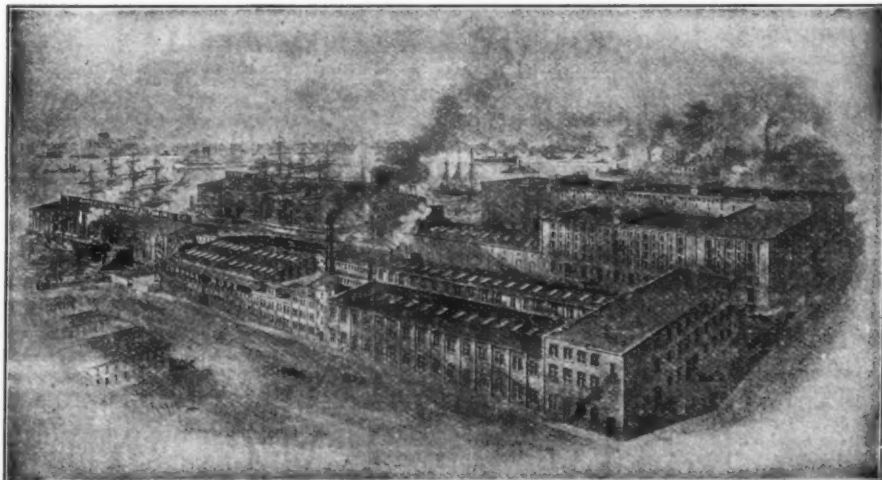
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**TREASURY DEPARTMENT.** Office of the Supervising Architect, Washington, D. C., December 21, 1901.—Sealed proposals will be received at this office until 2 o'clock P. M. on the 3d day of February, 1902, and then opened, for the construction (except heating apparatus, electric wiring and conduits) of the U. S. Court House, Post Office and Custom House at Tampa, Florida, in accordance with the drawings and specification, copies of which may be had at this office or the office of the Postmaster at Tampa, Florida, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect.

**THE TOWN OF LOUISBURG, North Carolina,** has voted (\$30,000.00) thirty thousand dollars for **WATER WORKS AND SEWERAGE.** The Board of Commissioners will consider plans and estimates for the construction of these systems. Address

E. S. GREEN, Town Secretary,  
LOUISBURG, N. C.

### Notice to Contractors.

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**BIDS** for the construction of and furnishing material for the erection of a Water Works and Electric Lights System for the town of Gloster, Miss., according to plans and specifications now on file in the Mayor's office. Sealed bids will be received until 12 o'clock noon, Tuesday, January 7th, 1902. All bids must be accompanied with solvent bonds to the amount of \$15,000. Said contract will be let to the lowest and best bidder. Board reserves right to reject any and all bids. G. M. CAUSEY, City Clerk.

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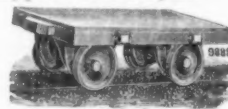
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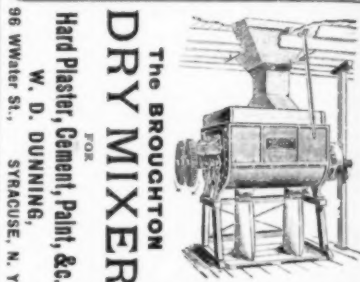


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## ALPHABETICAL INDEX OF ADVERTISERS.

Ads. marked \* appear every other week. Ads. marked † appear in first issue of the month. Ads. marked ‡ not in this issue.

For Classified Index See  
Pages 3, 5, 7, 9, 11, 13, 15  
and 17.

A	Buckingham & Paulson..... 28	Dunning, W. D..... 28	Hutton Engineering Co..... 6	Monitor Steam Generator Mfg. Co. 18	Recreation Car. & Remedy Wheel Co. 40
Acres Material Co..... 40	Buffalo Forge Co..... 56	Dupont Mfg. Co..... 36	Hydra Bros. & Co..... 15	Montross Metal Shingle Co..... 42	Reynolds, T. W. Bros..... 31
Acme Photo-Engraving Co..... 35	Builders' Iron Foundry..... 56	E. A. H., Box 26..... 30	Imperial Gas Lamp Co..... 58	Morris & Kindervater..... 12	Shelby Electric Co..... 34
Acorn Brass Works..... 53	Burnham Grate Co..... 18	Eastern Granite Roofing Co..... 42	Incandescent Electric Light Ma- 54	Morse, Williams & Co..... 52	Sherwood Hobbs & Mfg. Co..... 47
Adams, Henry..... 6	Burrows, E. S., & Co..... 3	Eckbold's, Wm., Sons..... 52	nipulator Co..... 54	Mott, DeWitt, & Co..... 28	Shimer, Saml. J., & Sons..... 56
Adams, J. M..... 11	Burt Mfg. Co..... 3	Edmonds, P. G..... 30	India Alkali Works..... 47	Mueller, H. Mfg. Co..... 2	Shultz Belting Co..... 56
Adams Laundry Machinery Co..... 2	Bushnell, G. H., Press Co..... 47	Edson Mfg. Co..... 50	Inglis, Wm., Wire & Iron Wks. 44	Murphy, H. Mfg. Co..... 2	Siegist Lubricator Co..... 19
Affleck, Geo. E..... 1	Bushong, M. M..... 47	Electrical Material Co..... 55	Industrial Water Co..... 47	Murphy, H. Mfg. Co..... 2	Simmons, John, Co..... 41
Altchison, Robt., Perf. Met. Co. 40	Byers, John F., Machine Co..... 15	Electric Supply Co..... 51	Industrial & Development Asso. 31	Murphy, H. Mfg. Co..... 2	Simmons, A. D. Co..... 56
Alabama Coal & Iron Co..... 8	Caine & Platt..... 34	Emmens, Newton W..... 30	Ingersoll-Sergeant Drill Co..... 26	Murray Iron Works..... 17	Simpson Mfg. Co..... 39
Alabama Iron Works..... 45	Caldwell H. W., & Son Co..... 4	Emmett Mfg. Co..... 40	Ingoldby Automatic Car Co..... 13	Myers, F. R., & Bro..... 50	Singer Automatic Ice Mch. Co. 22
Alber & Bryne..... 6	Caldwell, W. E., Co..... 40	Erie Pump and Engine Co..... 50	International Boiler Comp'd Co. 6	Nashville, Chattanooga & St. 4	Situation Wanted..... 23
Albro-Clem Elevator Co..... 52	Callahan, Geo., & Co..... 23	Erikson, Edward E..... 6	International Corres. Schools..... 6	National Pipe Bore Co..... 20	Skinner & Allen..... 55
Alexander Bros..... 24	Cameron, A. S., S. Pump Wks. 50	Etting, Edward J..... 25	International Power Co..... 16	National Promot. & Audit Co. 27	Smith, H. B., Machine Co..... 44
Alexander, S. B., Jr., Co..... 53	Cameron & Barkley Co..... 39	Eureka Fire Hose Co..... 24	International Sprinkler Co..... 1	National Roofing Supply Co..... 43	Smith, Samuel J., & Co..... 54
Allington & Curtis Mfg. Co..... 9	Camp Engineering Co..... 34	Eureka Supply Co..... 44	International Trust Co..... 27	National Roofing & Supply Co. 43	Smith, S. Morgan, Co..... 54
Alpha Photo-Engraving Co..... 49	Campbell & Clute..... 1	Excelator Knitting Mch. Mfg. Co. 47	Jackson Mfg. Co..... 2	Nat'l Skylight & Construction Co. 43	Snyder, H. P., Mfg. Co..... 1
Alsing, J. R., Co..... 38	Carbondale Chemical Co..... 23	Exeter Machine Works..... 19	Jacobs, M. R..... 26	New England Automatic Weigh- 24	South Steam Feed Works..... 8
American..... 48	Carborundum Co..... 41	Exeter Machine Works..... 52	Jacobson Machine Mfg. Co..... 21	ing Machine Co..... 24	Southeastern Lime & Cement Co. 8
American Arithmetic Co..... 9	Cardwell Machine Co..... 48	Fairbanks Co..... 18	Jacoby, W. F., & Co..... 8	Newhall, Henry B..... 41	Southern Engine & Boiler Wks. 48
American Blower Co..... 17	Carlin Machinery & Supply Co. 32	Fairmont Coal Co..... 34	Jenks, W. H..... 54	N. J. Car Spring & Rub. Co..... 24	Southern Industrial Co..... 38
American Bridge Co..... 1	Carnell, George..... 43	Fairmount Machine Co..... 46	Jenkins Bros..... 56	N. J. Foundry & Mach. Co..... 24	Southern Iron & Equipment Co. 34
American Cement Co..... 8	Carolina Fire Brick Works..... 42	Farmington Machine Co..... 46	Jeffrey Mfg. Co..... 40	N. J. Wire Cloth Co..... 44	Southern Railway Co..... 31
American Cotton Oil Co..... 48	Caroline Iron Works..... 3	Faunt Le Roy & Co..... 53	Jenks, W. H..... 54	N. J. Zinc Co..... 44	Southark Fdy. & Mch. Co. 15
Amer. Cor. School of Textiles..... 1	Caroline Iron Works..... 3	Fay, J. A., & Egan Co..... 45	Joseph, Isaac, Iron Co..... 34	N. Orleans Wood Preserving Wks 44	Spaulding Loom Harness Co. 44
Amer. Diam. Rock Drill Co. 39	Carroll Portland Cement Co. 3	Fayerweather & Ladew, Inc. 25	Keasbey & Mattison Co..... 26	Newport News Shipbuilding & 17	Spaulding, J. G..... 57
Amer. Elec. Sup. & Mfg. Co. 33	Carpenter, George B., & Co. 52	Felton, S. A., & Son Co..... 34	Keeler, E., Co..... 19	Dry Dock Co..... 47	Spencer & Hall..... 10
Amer. Frog & Switch Co. 13	Carpenter, George B., & Co. 52	Fernholz Brick Mch. Co..... 40	Kelley, Benj. F., & Son..... 19, 33	New Process Raw Hide Co..... 2	Sprague Electric Co..... 54
American Injector Co..... 3	Carver Cotton Gin Co..... 46	Finished Steel Co..... 20	Kelley Island Lime & Transport 19, 33	New St. Charles Hotel..... 28	Sprout, Waldron & Co..... 25
American Iron & Steel Mfg. Co. 10	Cary Spring Works..... 12	Fitz-Hugh & Co..... 34	Kelly, O. S., Co..... 39	New York Continental Jewell 2	Standard Paint Co..... 37
American Locomotive Co..... 13	Case Mfg. Co..... 17	Flint & Walling Mfg. Co. 51	Kendall & Flick..... 2	New York Equipment Co..... 34	Standard Pneumatic Tool Co. 10
American Mfg. Co..... 27	Casey, D. L., Machine Co..... 34	Foos Mfg. Co..... 38	Kennedy, Walter..... 6	Nichol, T. W..... 26	Standard Scale & Sup. Co., Ltd. 4
American Sheet Steel Co..... 26	Caster, Curran & Bullitt..... 8	Fox, M. Ewing, & Co..... 42	Kennett Water Softener Co..... 22	Nicholson File Co..... 26	Standard Traction Brake Co. 14
American Ship Wladians Co..... 26	Cattell, Charles..... 26	Frank Machinery Co..... 45	Kentucky Electrical Co..... 55	Niles-Bement-Pond Co..... 26	Stanley Electric Mfg. Co. 9
American Spiral Pipe Works..... 51	Causey, G. W..... 28	Freese, E. M., & Co..... 37	Kilbourne & Jacobs Mfg. Co. 2	Noland, Wm. C..... 30	Star Brass Works..... 43
American Steam Gauge & Valve 23	Cedartown Co..... 30	French, A., Spring Co..... 4	Kilburn, Lincoln & Co..... 46	Nordyke & Marmon Co..... 30	Starr, B. F., & Co..... 25
American Steel Hoop Co..... 6	Challenge Tube Cleaner Co. 18	French, Sam'l. H., & Co..... 8	Kilby Locomotive & Mach. Wks. 34	Norfolk & Western Railway..... 30	Starr, B. F., & Co..... 25
American Supply Co..... 41	Chapman, W. A., & Co..... 6	Frick Co..... 22	Kilton Hydro-Carbon Heating 34	North American Metaline Co. 21	Starr, B. F., & Co..... 25
American Tool Works Co..... 36	Charleston Lead Works..... 37	Froehling, Dr. Henry..... 6	Klauder-Weldon Dye'g Mch. Co. 46	Northern Electrical Mfg. Co. 9	Steele, J. C., & Sons..... 41
American Type Founders Co. 63	Charlotte Roof & Paving Co. 41	Gadsden Commercial Club..... 31	Landis Banking Co..... 27	Norton Emery Wheel Co..... 5	Steele, J. C., & Sons..... 41
Andrews, Perry, & Bro..... 50	Chaz Pulley Co..... 21	Galema Oil Co..... 26	Landis Tool Co..... 27	Norway Iron and Steel Co..... 12	Stellwell-Bierce & Smith-Vall- 19, 31
Arctic Machine Co..... 23	Chattanooga Paint Co..... 42	Galt, John, & Sons..... 41	Lane Mfg. Co..... 45	Nye & Tredick..... 47	Stimpson, E. E., & Son..... 25
Armstrong, R. S., & Bro..... 32	Chesapeake Electric Co..... 56	Gandy Belting Co..... 24	Lang, B. Logan..... 43	Obermayer, S. Co..... 11	Stowell Mfg. Co..... 45
Asphalt Ready Roofing Co. 42	Chesapeake Steamship Co..... 49	Gardner Governor Co..... 51	Latrobe Steel & Coupler Co. 30	Ohio Injector Co..... 20	Struthers, Wells & Co..... 17
Associated Expanded Metal Co. 1	Chester Steel Castings Co..... 12	Garden City Sand Co..... 8	Latrobe Steel Co..... 12	Ohio Pulley Co..... 21	Stuebner, G. L., Iron Works..... 37
Atherton Machine Co., The A. T. 45	Chicago House Wrecking Co. 32	Garfield Paint Co..... 48	Ledell, Frank..... 6	Old Dominion Land Co..... 56	Sturtevant, B. F., Co..... 35
Atkins, E. C., & Co..... 45	Childs, O. J., Co..... 1	Garrett, C. B., & Son..... 43	Leffer, James, & Co..... 51	Old Dominion Land Co..... 56	Sturtevant Mill Co..... 49
Atlantic Transport Co..... 49	Cin., Hamilton & Dayton R.R. 22	Gem City Boiler Co..... 16	Leffer, Chas., & Co..... 37	Old Dominion Land Co..... 56	Sullivan Machinery Co..... 39
Atlas Engine Works..... 14	Clarendon Boiler Works..... 49	General Electric Co..... 54	Lehman, Charles T..... 34	Old Dominion Land Co..... 56	Sweet & Doyle..... 20
Atlas Pipe Wrench Co..... 41	Cleveland Belting & Mch'y. Co. 33	General Fire Extinguisher Co. 6	Lewis, H. F., & Co., Ltd..... 49	Old Dominion Land Co..... 56	Tabor Mfg. Co..... 4
Atwell Machinery Co..... 33	Cleveland Term. & Valley R.R. 49	Gen'l Incandescent Arc Light Co. 54	Lewox, Theodore..... 39	Old Dominion Land Co..... 56	Tanite Co..... 4
Audit Co. of New York..... 28	Cliff & Guilbert Co..... 10	Genuine Bangor Slate Co..... 12	Lidgerwood Mfg. Co..... 15	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Aultman Co..... 12	Climax Mfg. Co..... 13	George Foundry & Mach. Wks. 47	Lidgerwood Mfg. Co..... 15	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Austin, F. C., Mfg. Co..... 38	Cochran Co..... 23	Gibbs, W. H., & Co..... 47	Link-Belt Engineering Co. 52	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Austin Separator Co..... 20	Codd, E. J., Co..... 33	Gilbert, C. M., & Co..... 8	Litharge Paint Co..... 43	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
B	Coe Mfg. Co..... 45	Gillingham, A. H..... 30	Lockwood, Greene & Co..... 17	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Babcock & Wilcox Co..... 16	Coffin, George M..... 20	Gilman, Wm. M..... 49	Lombard Iron Wks. & Sup. Co. 17	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bacon Air Lift Co..... 50	Coggins & MacBride..... 17	Golden's Foundry & Mach. Co. 20	Long & Allstatter Co..... 36	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Badger, E. B., & Sons Co..... 48	Cohoes Iron Foundry & Mch. Co. 1	Goodall Packing Co..... 50	Loomis & Nyman..... 50	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bader, Adamson & Co..... 40	Collier & Brown..... 42	Goodall Packing Co..... 50	Lowell Machine Shop..... 46	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Baer, Richard P., & Co..... 45	Colonial Paint & Varnish Co. 42	Grant & Williams..... 32	Ludlow-Saylor Wire Co..... 44	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Balley-Lebby Co..... 41	Columbia Bridge Co..... 6	Greaves, Kinsman & Co..... 1	Ludlow Valve Mfg. Co..... 22	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Balley, John T., & Co..... 26	Columbia Phonograph Co. 20	Green, E. S..... 18	Lufkin Rule Co..... 12	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Balr, U., Machinery Co..... 32	Columbia Refining Co..... 47	Greenwald, I. & E., Co..... 21	Lunkenheimer Co..... 23	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Baker, H. C., & Co..... 32	Columbia Machine Co..... 17	Guarantee Electric Co..... 33	Lykes, John D..... 3	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Baker, Edgar & Co..... 27	Columbus Machinery Co..... 54	Gulf Cypress Lumber & Tank Co. 49	Macomber & Whyte Rope Co. 52	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Balderson, H., & Son..... 44	Commercial Electric Co..... 54	H	MacRae, Hugh, & Co..... 27	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Baldwin Locomotive Works..... 13	Conard, Thos. P..... 32	Haines, William S., Co..... 4	Magid, Louis B., & Co..... 28	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Ball Engine Co..... 6	Continental Trust Co..... 27	Hall, Chas. A..... 4	Makepeace, C. R., & Co..... 6	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Ball & Wood Co..... 1	Contractors' Plant Mfg. Co., Ltd. 14	Hallam, Wirt W..... 47	Males Co..... 34	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Baltimore Engraving Co..... 49	Cook's, Adam, Sons..... 14	Hambleton & Co..... 47	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Baltimore & Ohio R.R..... 49	Cook Well Co..... 50	Hammond Iron Works..... 16	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Baltimore Steam Packet Co..... 49	Corder, Edward..... 28	Hanson & Van Winkle Co..... 26	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Barber, A. H., Mfg. Co..... 22	Cordeman, Meyer & Co..... 45	Hartie's Boiler Works..... 18	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Barnes, W. F., & John, Co..... 37	Cortright Metal Roofing Co. 42	Hartman, Wm. G., Cement Co. 3	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Barrett, G. & H., Co..... 56	Cotton Oil & Fibre Co..... 49	Haskell-Dawes Mch. Co..... 1	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Barrett Mfg. Co..... 26	Cox, Justice, Jr., & Co., Ltd. 44	Hay-Budden Mfg. Co..... 57	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Barrett, Haywood & Co..... 42	Cresson, Geo. V., Co..... 38	Hayward Mfg. Co..... 57	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bates, James, Sons..... 53	Crippen, H. D..... 39	Hazen Boiler Co..... 16	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Baumgarten, A. F., & Co..... 33	Crocker-Wheeler Co..... 54	Healy Ice Machine Co..... 23	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Beach, H. W..... 44	Crooked Fork Coal & Coke Co. 5	Heine Safety Boiler Co..... 16	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Beardsley Gravity Dam & Con. Co. 50	Croby Steam Gauge & Valve Co. 6	Help Wanted..... 35	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Beaumont Trust Co..... 50	Crown Dryer Co..... 40	Hendrick Mfg. Co., Ltd..... 40	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Belmont Iron Works..... 7	Crutchfield, J. H..... 48	Hennings, John, & Son..... 32	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Benjamin Iron & Steel Co..... 34	Curran, Jas. H., Elevator Co. 53	Hicks, F. M., & Son..... 3	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Berryman, James..... 9	Cutter Mfg. Co..... 56	Higgins, Theo., & Son..... 9	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bertsch & Co..... 1	Cypress Lumber Co..... 34, 49	Hill, Wm. E., & Co..... 33	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bely, C. H., & Co..... 56	D	Hill & Griffith Co..... 2	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bickford Drill & Tool Co..... 36	Dallett & Co..... 6	Holt, S. L., & Co..... 33	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bird, J. A., & W., & Co..... 41, 42	Dart, E. M., Manufacturing Co. 20	Holmes & Bullington..... 43	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Birmingham Boiler Works..... 19	Davis Coal & Coke Co..... 8	Hoopes & Townsend Co..... 12	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Birmingham Ball & Loc. Co. 34	Davis, F. H., & Co..... 38	Hornaday, J. P..... 28	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Blakeslee Mfg. Co..... 17	Davis, G. M., & Son..... 39	Houston & Liggett..... 30	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Blanton, Jr., E. A..... 40	Davis, John..... 32	Houston & Wright..... 30	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Blythe, Richard A..... 28	Davis, Wm. P., Machine Co. 1	Hughes Specialty Well Drill Co. 12	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Boggs, E. B..... 53	Davis, Wm. P., Machine Co. 1	Humboldt Metal Works..... 12	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Boggs, J. S..... 53	Dawson, A. L., & Co..... 33	Hunt, C. W., Co..... 28	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bolles, J. E., Iron & Wire Wks. 44	Dean Bros. Steam Pump Works. 50	Hutchinson Bros..... 10	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bonar, James, & Co..... 25	Denham, J. F..... 35	Huthar Bros..... 1	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bonds..... 28	Dehner-Wuerpel Mill Bldg. Co. 25	I	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bonneville Portland Cement Co. 8	Delaware Trust Co..... 28	Imperial Gas Lamp Co..... 58	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Boomer & Boschert Press Co. 8	Delgado Mills..... 32	Incandescent Electric Light Ma- 54	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bosted Pneumatic Tube Co..... 7	De Loach Mill Mfg. Co..... 44	India Alkali Works..... 47	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Boston & Maine Railroad..... 49	De Ronde, Frank S., Co..... 26	Inglis, Wm., Wire & Iron Wks. 44	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Boston Belting Co..... 24	Detroit Graphite Mfg. Co..... 26	Industrial Water Co..... 47	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Boston Blower Co..... 23	Detroit Lubricator Co..... 19	Industrial & Development Asso. 31	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bourne, The..... 4	Diamond Machine Co..... 56	Ingersoll-Sergeant Drill Co..... 26	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bowen, Jos. E..... 34	Dimmick Pipe Co..... 51	Ingoldby Automatic Car Co..... 13	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bowser, S. F., & Co..... 56	Dixon, Jos. Crucible Co..... 36	International Boiler Comp'd Co. 6	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bowsher, N. F., Co..... 44	Dopp, H. Wm., & Son..... 50	International Corres. Schools..... 6	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Box 50..... 30	Dow Wire Works Co..... 44	International Power Co..... 16	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bradley Pulverizer Co..... 39	Drapac Mfg. Co..... 42	International Sprinkler Co..... 1	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Bradstreet Mercantile Agency..... 33	Duffur & Co..... 44	International Trust Co..... 27	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Broeton, Fendick & Co..... 1	E	Jackson Mfg. Co..... 2	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Brown, A. F., & Co..... 38	Eckbold's, Wm., Sons..... 52	Jacobs, M. R..... 26	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Brown, Thos. & Co..... 15	Edmonds, P. G..... 30	Jacoby, W. F., & Co..... 8	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16
Buckeye Iron & Brass Works..... 48	Edson Mfg. Co..... 50	Jenks, W. H..... 54	Mallory, J. D..... 33	Old Dominion Land Co..... 56	Tate, Jones & Co..... 16



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LESSORS OF

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Factory Sites with Cheap Electric Power. Also Direct Water Power.

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Along the lines of the

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Pursuant to an order of Gwinnett Superior Court, dated Nov. 20th, 1901, I will sell at public outcry, before the Court House door of Gwinnett county, Lawrenceville, Ga., between the hours of 10 A. M. and 3 P. M., on the 18th day of January, 1902, the entire property of the Gwinnett Cotton Mills, built in 1901, at a cost of \$105,000.00, consisting of about twenty-six (26) acres of land in Lawrenceville, Ga., on the Seaboard Air Line R. R. and Southern Railway Company; 1 two-story and basement brick mill building, built according to the latest architecture, and carries the lowest rate of insurance; 18 four-room well built operative houses; 1 brick warehouse, Factory Association approved; the mill is equipped with new and the latest improved Netherington Mule Spinning Machinery, six mules, 700 spindles, each, 15 46" flat top revolving cards, Foster Cone Winders, electric lights, humidifiers, sprinklers, Underwriters' fire pump, has a full supply of running water, cisterns, tanks, etc., and is complete in every respect.

The mill is now in full operation, having been completed only about five months ago.

For cash, subject to confirmation of Court. Bids to be accompanied by certified check for \$7,000. Possession delivered upon confirmation of sale and payment of balance of purchase price. For full detailed information, address

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factories, Agricultural

Implement

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### Good Sites at Low Prices

Alexander City has an excellent loca-  
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Good Market, Excellent Churches,  
Free Schools, Electric Lights. Before  
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interest you.

Write for information to

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**Industrial and Development Association,**

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## WHEELING, W. VA.

has advantages as a manufacturing point that cannot fail to interest  
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At a number of points in the South along  
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## Ten 150 H.P. Boilers

LOCOMOTIVE TYPE.

Built of the best materials and in the best manner. Good for 100 lbs. working pressure. Tubes 3" diam. x 16 ft. long. Fire-boxes 7 ft. x 5 ft.

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**Lathes.**  
One 96" swing triple geared. One 21" x 10' Prentiss.  
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" 30" x 22' " 17" x 6'  
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One 66" 44" 36" 23" 20" 16" and 15 1/2"  
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**STEAM SHOVELS:**—One Marion style "A" steam shovel with a 1 1/2 yard dipper, also One Osgood with a 3/4 yard dipper.

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If you are in the market for a second-hand Boiler and Engine, Steam Pump, Feed-Water Heater, Steam Trap, Dynamos, second-hand Belting, Pulleys, Hangers and Shafting, second-hand Steam Pipe, any size or quantity; Wrought Iron Tanks, Smoke Stacks of any kind, kindly communicate with us, as we are in a position to fit you out, and will guarantee perfect satisfaction or refund the money and bear all expenses

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Twenty-five Ton Refrigeration.  
Ten Ton Manufacturing.

First-class condition. Cost \$10,000.  
Selling price to move quickly \$2500.

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Corliss and Double Valve Engines for Trolley Roads and Electric Lighting Stations.

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1 16" x 24" Harris Corliss.  
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1 12" x 12" Ball automatic.  
1 13 in. x 14 in. Watertown automatic.  
1 14 in. x 13 in. Armstrong & Sims automatic.  
1 15 1/2 in. x 16 in. New York safety automatic.  
1 13 1/2 in. x 15 in. Armstrong & Sims automatic.  
1 16 in. x 16 in. Ball automatic.  
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110, 220, 500-volt motors, from 1 H. P. to 300 H. P.

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ALTERNATORS,  
ARC DYNAMOS,  
LAMPS, STREET-CAR, ETC.

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Electrical and Steam Machinery,

141 Broadway, N. Y. Factory, Jersey City, N. J.

SEND FOR NEW CATALOG.

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Two Pair 35" Special Leffel Horizontal Shaft Turbines.

These two pairs of turbines coupled together will develop, under 15 feet working head of water, 400 H. P., using a total of about 18,000 cubic feet of water per minute; speed of turbine shafts 165 r. p. m. Turbine shafts hammered wrought iron, 5 1/2" dia. Turbine runners with steel buckets. The pedestal bearings are supported on columns. The center casing for each pair of these turbines made of riveted steel, with draft tubes 6 ft. dia. Both pairs of turbines fitted with upright gate shaft and gear connections. Have not been used. For further information write to the under signed.

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Nichols Patent.

Will dry 200,000 feet each 24 hours. Is good as new, with pump, etc. Less than half price. Six return flue tubular boiler, 125 to 150 H. P.; will carry 90 to 120 lbs. steam. All perfect. Immediate delivery.

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One second-hand "BERRYMAN" HEATER AND PURIFIER, in perfect condition and guaranteed good as new. Will sell cheap for cash. Address

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76" x 20' Farrell, compound rest, triple-gear, worm drive.  
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18" swing pit lathe, very heavy.  
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48x48x14 Putnam, latest patterns, 2 bds., new.  
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19'6" plate planer.

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28" Smith & Mills, geared.  
26" ditto.  
32" Prentiss friction, new.  
26" ditto.  
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3" Cleveland automatic, A1.  
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5-16" Hartford automatic.  
No. 2 1/2, No. 2, No. 1 and No. 0 Pratt & W. hand.  
No. 2 1/2 Garvin double turret.

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3, 4 and 5 and 6" Bickford radials, new.  
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3" McNaull univ. radial, fine order.  
3 3/8" Column drills, very heavy.  
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600-lb., 800-lb., 1000-lb., 1400-lb. and 1700-lb. ditto.  
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No. 2 Brown & Sharpe surface grinder.  
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For Immediate Delivery.

1 20" Williamsport single surfer.  
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1 Houston sash and door tenoning machine.  
1 Smith sash and door tenoning machine.  
1 J. A. Fay & Co., car tenoning machine.  
1 Rowley & Hermance improved panel raiser.  
1 Smith panel raiser.  
1 1 1/2" Lewis punch or shear.  
1 100 lb. drop hammer.  
1 850-lb Merrill drop hammer.  
1 24" Aurora upright drill.  
1 25" Blaisdell " "  
1 40" New Haven upright drill.  
1 52" x 48" x 24" Sellers' planer, 3 heads.  
1 24" x 24" x 5" Powell planer.  
1 20" x 21" Johnson engine lathe, taper attachment.  
1 48" x 24" triple-gear engine lathe.  
1 motor-driven air compressor, Hunt.  
1 Weston 98-light generator.  
1 lever-feed automatic turret.  
1 1 1/2" No. 2 hollow spindle automatic screw machine.  
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Lot of Boilers, Engines, Lathes, Planers, Drill-Presses, 1 Large Fire Pump, Steam Pipe, all sizes, and about 500 Tanks of different sizes.

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## Six 75-ton Ice Machines,

Vertical compression type,  
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We purchased them from Armour & Co., Chicago.

They were discarded owing to the necessity for increase of power and for no other reason. They are in excellent condition, and we are now engaged in removing them from their Chicago Stock Yards Plant. They can be inspected, and two of them are still in use. This is an excellent opportunity and will make exceedingly alluring propositions to purchasers.

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One Rogers Locomotive, standard gauge, 30 ton.

## Chicago House Wrecking Co.

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## Rope Transmission Rig

CONSISTING OF

1 22 foot Grooved Wheel, 73" face with 22 grooves for 2 1/4" rope. The shaft is 20" diameter in wheel, 18" in bearings and has clutch coupling on end.  
2 heavy Pillow Blocks with 30" bearing.  
1 54" Grooved Wheel, 73" face, with 22 grooves for 2 1/4" rope; bore 10 1/2".

All parts are heavy, well proportioned and in the best of condition.

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5 pairs of Alligator Shears,  
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1 RE-SQUARING SHEAR for light sheets.

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Write for complete list.

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FOR SALE.—Band Saw, Scroll Saw, 7" and  
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Correspondence solicited.

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100 h. p. 12x24 Buckeye Automatic.  
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Immediate Delivery.

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2 14 1/2"x15" Armstrong & Sims Automatic. 2 14 1/2"  
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18" Russell Automatics. 2 13"x12" Ball Automati-  
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Send for special list.

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100 H. P. National Water Tube Boilers. 5 66"x18"  
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Several full Railway and Electric Lighting  
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Also a large assortment of New Machinery for  
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### The Machinery of First-Class Cotton Mill.

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Automatic Engines.—1 13"x14" self-contained,  
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Erie City Iron Works.

Horizontal Engines.—Cylinders 16"x24",  
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Vertical Engine and Boiler.—1 8 H. P.  
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Transit complete with tripod. Cost \$200. Sell  
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all sizes. Taken in trade for our Improved  
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1 12 and 18 1/2x10 1/2x12 Buffalo Steam Pump Co.'s  
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Root Blowers, Nos. 2, 3 and 5.

Large assortment of iron and wood working tools.

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### For Sale—Dynamos, Engines, Boilers, &c.

DYNAMOS—Brand new, modern, best make,  
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27-light Dynamos, all complete, \$ 67.50.

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We have also some first-class second-hand Ma-  
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others.

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100 H. P. Westinghouse Compound, \$475.

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Steel Pressure Blowers. Vertical Boilers, 6 to  
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H. P. Shipman Coal Oil Engine. Conant Corn  
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General Electric, Inductor Motors

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No. 375. 13x12 Ball automatic.

163. Armstrong & Simms cross compound, 13 1/2x

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192. 11x12 New York Safety.

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148. 12x20x12 Westinghouse.

220. 11x12x11 Westinghouse.

222. 14x24x14 Westinghouse.

239. 18x36x16 Westinghouse.

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235. 20x20 Nordburg slide valve.

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132. 16x24 slide valve.

206. 14x24 box bed slide valve.

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154. Two 50 H. P. Otto gas and gasoline engines.

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810. 10x16 double drum, double cylinder Mundy

hoisting engine.

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753. 8 1/2x12 double single drum.

377. Locomotive boiler with hoisting rig

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108. 8x12 Webster, Camp & Lane double cylin-

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55. 8x12 single cylinder hoisting engine and

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469. 4-5x15, no dome.

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676. 60x12 Vertical fire box.

686. 66x16 tubular.

688. 66x18 tubular.

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716. 4-22x20 tubular, no dome.

007. 80 H. P. locomotive fire box boiler.

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009. 50 vertical, from 2 to 20 H. P.

010. 20 locomotive fire box boilers, from 10 to 40

H. P.

032. 125 H. P. locomotive fire box boiler.

#### AIR COMPRESSORS.

337. 1 straight line steam driven air compressor,

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20x22x24.</



FOR SALE—New or Second-Hand  
STEEL T

# RAILS

Light or heavy section.  
WE BUY OLD RAILS if fit to relay.

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FOR SALE.

One marine steel fire box boiler 10 feet long, 73 inches diameter.  
Eight cylinder boilers, 36 inches diameter, 36 feet long.  
One Lane & Bodley engine, 14x20.  
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One single cylinder slide valve 15 H. P. hoisting engine.  
One Wm. E. Hill & Co.'s drag saw.  
One surfacer.

THE CYPRESS LUMBER CO., Apalachicola, Fla.

## ENGINES.

22"x43" Wright Corliss.  
14"x30" Horizontal Slide Valve.  
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4 1/2"x27" Upright Oscillating.

For sale cheap. For further particulars and prices apply to

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410 Bullitt Building, PHILADELPHIA, PA.

FOR SALE!

1 25-h. p. locomotive boiler, 1 15-h. p. return tubular boiler and ten radiators, also 6 miles 40-lb. steel relaying rails. Southern delivery, first of January, and 40 40,000 capacity flat cars.

LOCOMOTIVES, standard and narrow gauge.  
1 75-h. p. ret. tub. boiler; 70 ton 40 lb. steel T rail, immediate delivery. Also a Forney type saddle tank standard gauge Porter locomotive, cylinder 12x18, diameter of driving 42", thickness 2"; also an 8-wheel American type, Rodgers make, 14x22" cylinder. 1 Saw Mill, capacity about 15 or 20,000 ft. a day; also 3000 Standard M. C. B. good second hand couplers, one 42" gauge passenger coach and two 75-H. P. return tubular boilers. These goods are all right. Write JES. E. DOWES, Citizens Bank Bldg., Norfolk, Va.

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2 first-class 66"x18" Tubular Boilers with 34 4" Tubes; boilers connected by both mud and steam drums; full flush front fixtures; built in 1897; subject to inspection; Tupper grate bars, very fine. Can deliver about January 15th.

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Branch Offices: The Rookery, Chicago; Towns-  
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FOR SALE.—Engine 12 1/2"x24, \$200; 12x16, \$200. Traction Engines, 10 and 12 horse, \$300; 10 and 12 horse portables on wheels, \$175 each. One Fire Engine, made by Cole Bros., Pawtucket, R. I., all complete. Pratt & Whitney Drill Presses, 12" swing, \$15. Five Boilers, 50x18, twenty flues 6" diam., \$50 each. 16-horse Portable Engine and Boiler on wheels, with Pony Saw Mill, \$300. 10-horse Hoisting Engine, Portable Boilers, 20, 30, 35-horse, with engines to match, at one-third their actual value. Machinery of every description at buyers' prices. D. L. CANEY MCH. CO., Springfield, O.

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ENGINE, built by the H. K. Porter Co., Pittsburg, Pa.: 12 ft. high, standard gauge, cylinders 12"x18", four 36-inch drivers, saddle tank, suitable for heavy loads and sharp curves. Weight about 44,000 lbs. Address General Manager,

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Five 72"x16" High Pressure Boilers, now carrying Hartford Insurance for 25 lbs. steam pressure. Can be delivered about January 10th next. Full line of all kinds of machinery in stock. Write for prices. Machinery that has been used, but in good condition, also bought.

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HIGH SPEED ENGINE BARGAINS.				
No.	H.P.	Maker.	Cylin. Speed.	Whls.
2	150	Buckeye "C"	14 1/2"x16	240 7x15
4	150	Westinghouse	13 1/2"x22 1/2"	290
1	125	"	11 1/2"x19 1/2"	300
2	75	"	12x11	300
1	75	N. Y. Safety	12x12	300
1	100	Porter-Allen	12x20	
1	30	Arm. & Sims	9 1/2"x12	
1	325	Baragwanath Heater	brass tubes.	

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FOR SALE.—14x21 Wright Automatic Engine. In good condition and now running. To make room for larger engine. No reasonable offer refused.  
REYNOLDS & CO., New Haven, Conn.

SPECIAL.—40-H. P. OTTO DOUBLE CYLINDER

## Gasoline Engine

with all fittings and connections complete and in best of condition for sale at \$500  
Guaranteed as stated. Now running a wood-working plant.

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Want to correspond with manufacturers in Middle Atlantic States having power presses to stamp shallow steel forms 1 1/2 inches in depth and 30 to 40 inches circumference.  
Address R, care Manufacturers' Record.

36" GAUGE.



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Brand New. Immediate delivery  
Also Standard and Narrow Gauge

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PASSENGER COACHES, FREIGHT CARS.

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Passenger Type Locomotive—4 ft. 8 1/2 in. gauge, cylinders 15 in.x22 in., drivers 53 in. centers. Westinghouse Air Brakes—weight 25 tons, capacity of tank 2000 gallons. Prompt delivery.  
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Steel Rails, Cars, Locomotives, Railroad Supplies.

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CASH OR EASY PAYMENTS.

Locomotives, box, flat, gondola and logging cars, standard and narrow gauge; Climax geared locomotives, all gauges.  
Write for description and prices.

Special Bargains.

South Side Alley L engines, \$2500 each; 34-foot standard gauge flat cars, 42-ton standard gauge Mogul locomotives; standard gauge Russell logging cars, 24 inch wheels; B. & N. logging cars, 28 inch wheels; 60,000 capacity flat and Gondola cars; 8x14 Porter dinky engine; 40,000 capacity 40 foot flat cars, standard gauge.

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## KILBY LOCOMOTIVE & MACHINE WORKS

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BUILDERS OF

## Logging Cars.

Prices and specifications furnished  
upon application.

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For every gauge, weight and service.

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LOCOMOTIVES.

1 6-ton Byers geared, 36" gauge.  
1 12-ton Dunkirk geared, wood rails, 36" gauge.  
1 7-ton Dunkirk geared, wood rails, 36" gauge.  
1 16-ton 10x16, 4 drivers with tender, 36" gauge.  
1 7-ton Porter Saddle Tank 7x12 cylinders, standard gauge.  
Get our prices on new Saddle Tank and Mogul Locomotives.

SCOTT, LOW & CO.

Empire Building, Pittsburg, Pa.

FOR SALE.

1 standard gauge 20-ton Locomotive, saddle tank, good condition. 1 standard gauge 14-ton Locomotive, saddle tank. 1 18-inch gauge 4-ton Locomotive and 40 Tram Cars, suitable for mining, plantation work, etc. 3 Flat Cars, standard gauge. 2 Logging Cars, standard gauge. 4 miles of 50-lb. Steel Relays, good condition. 4 miles of 16-lb. Steel Relays, good condition. All for prompt delivery. Further information write SABEL BROS., Jacksonville, Fla.

FOR SALE

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## LOCOMOTIVES

AND QUICK

ALL SIZES. CARS DELIVERIES.

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We have Twelve Standard Gauge Locomotives on hand, for sale cheap. Write for descriptive lists and prices.

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Two (2) 50-ton Consolidated Locomotives, standard gauge, in good order.  
Two (2) 40-ton Passenger Locomotives, standard gauge, in good order.  
300 Box, Flat and Gondola Cars.

New York Equipment Company, 71 Broadway, New York.

LOGGING CARS,  
LIVE ROLLS,  
DRY KILNS, And  
IRON KILN TRUCKS

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FOR SALE.—Rails and Locomotives.

We offer for sale, for Southern delivery, 300 tons 35-lb., 350 tons 40-lb. and 100 tons of 30-lb. steel relaying rails. Also 12 first-class standard and three-foot gauge locomotives.

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## Railway Equipment

Locomotives, Passenger and Combination  
Cars, Flats, Gondola and Box Cars.

Both Standard and Narrow Gauge.

RELAYING RAILS, all Weights.

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1500 tons 30 and 35-lb. Iron T Relaying Rails and Splices. Locomotives of various types, sizes, etc., at our shops here, overhauled and ready for service, for wood or iron track.

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Old Locomotives, Cars, Iron and Steel Structures. Machinery of all kinds. Address,

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## NEW STEEL RAILS

800 tons of 40 lb.  
with angle joints.

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with plain joints.

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with plain joints.

TIDEWATER DELIVERY.

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New Frogs and Switches, all sizes.

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1 McGowan 4-inch 7"x6"x10" Duplex Pump.

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Also SCRAP IRON.

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120 tons first-class steel relaying 40 and 45 pound rails, small tonnage 16 and 25 pound new rails, second hand machinery, boilers, etc. Cash paid for abandoned works, railway or other equipment.

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## Heavy 36" Gage LOCOMOTIVES

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We own and offer the following:

2 16"x20"-Cyl.	10 Wheelers.
2 14"x16" "	Moguls.
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We own 20 other light locomotives,  
all gages.

10 50,000 Capacity Flat Cars.
16 40,000 " "
14 30,000 " "

CORRESPONDENCE SOLICITED.

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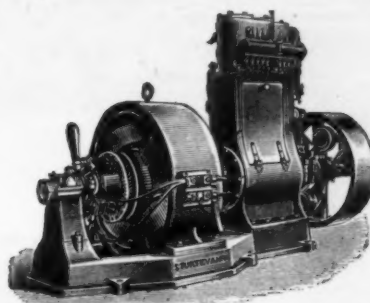
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In 55 Standard Styles and Sizes.



Our specialty in the Electrical line is the building of small and medium size generating sets of the highest grade, ranging from 1/4 to 100 K. W. capacity. The immense variety in our patterns makes it possible for us to build special machines in endless variety with high or low pressure, horizontal, vertical, open or enclosed engines.

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## RELAYING RAILS FOR SALE.

300 tons, 30 lbs. to the yard, with joints, frogs and switches, for immediate shipment.

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Two 10'x16"x8 1/2"x10" Compound Duplex Worthington Pumps. One Hor. Tub. Boiler, 5'x15', all fittings. 450 feet of Coal Conveyor and Elevator complete with trough, sprockets, &c. Three Rapid Hay Hoists. One 15-horse Portable Boiler and Engine. One Double Cylinder Single Drum Boiler and Engine, 5'x9". One 8'x9" Vertical Engine. Write your wants.

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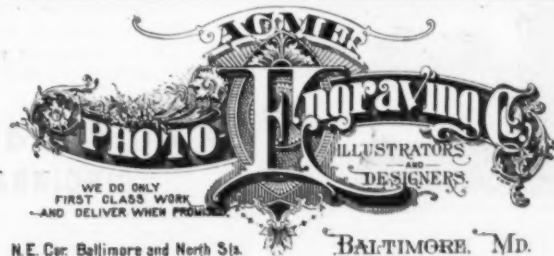
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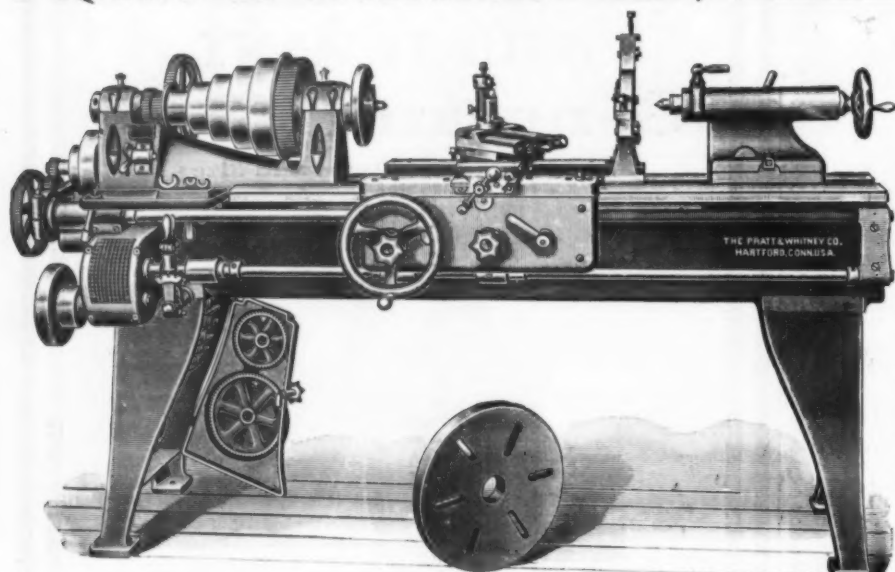
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## 14-INCH LATHE

This 14" Lathe is built specially to meet the demand for a heavy tool-room machine. It is the strongest and most rigid one upon the market. Bed is of tubular cross section, carriage extra heavy and gibbed front and rear, large Spindle bearings,  $\frac{1}{2}$ " hole in spindle, tail stock off-set, independent spline shaft with six feed changes, three regulated by lever without stopping the machine.

Send for catalogue "R" giving more complete description.

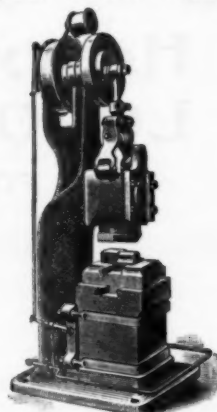
Awards Pan-American Exposition: Three Gold Medals, Three Silver Medals and Two Bronze Medals.

**PRATT & WHITNEY COMPANY,**

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## Dupont Power Hammer.



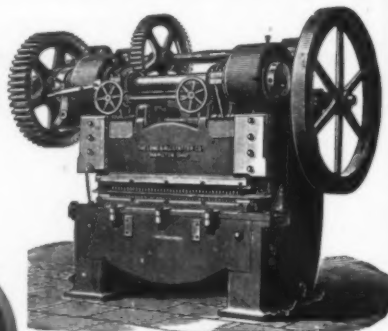
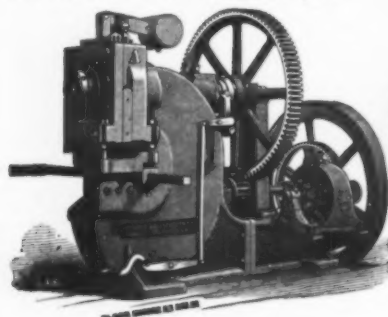
For Cotton Mill Repair Work, Machine Shops, Foundries and wherever a general Utility Power Hammer is needed. It has a large range of work, easy and simple to operate. Ask for Catalogue.

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## POWER PUNCHES AND SHEARS.

BEAM COPING MACHINES,  
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DROP & HELVE HAMMERS, etc., etc.



DESIGNED AND MANUFACTURED BY  
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Every point about a BICKFORD RADIAL is a good point. There's not a weakness or a faulty feature in its make-up. Every "talking point" in a Bickford Radial is one of real advantage, which has been demonstrated to the full satisfaction of the owners of some of the largest shops in the world. Are you open to conviction?

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Cincinnati, O., U. S. A.

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Made in Four Styles and All Sizes.

Fixed Caliper Gauges, Standard Measuring Machines and Adjustable Hollow Mills. Write for No 6 Tool Catalog.

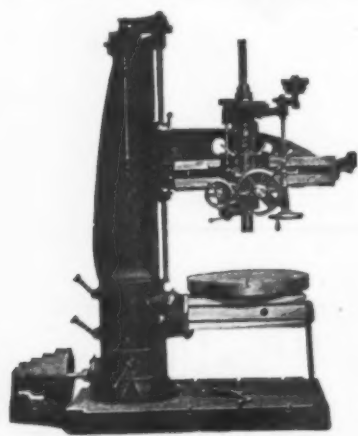
**THE JOHN M. ROGERS, BOAT, GAUGE & DRILL WORKS,**  
GLOUCESTER CITY, N. J., U. S. A.

## "AMERICAN" RADIALS

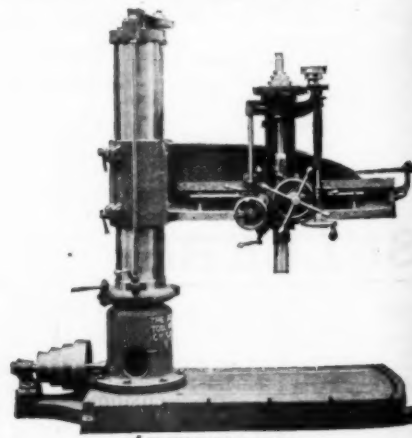
Were awarded the **GOLD MEDAL**, the HIGHEST AWARD at the PAN-AMERICAN.

Here are some of the reasons why:

Great convenience to the operator in manipulating head, back gears and tapping attachment. Back gears on the head, making communication direct to spindle. Sixteen speeds to spindle. No loose nuts or wrenches. There are other reasons, too, fully shown in our special circulars which are free to all.



3" COMBINATION RADIAL DRILL.



5" PLAIN RADIAL DRILL.

**The American Tool Works Co.,**  
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HIGHEST AWARD  
**GOLD MEDAL**  
AT  
PAN-AMERICAN



**Santa Claus**  
Brings  
**RUBEROID**  
(Trade Mark Registered)  
For the Roof  
that Leaks

As a waterproof and acid proof roofing, Ruberoid is unapproached. Never leaks. Joints always remain tight. Lasts much longer than tin or iron, is less expensive and requires less care. Does not melt, rot or tear. Light, easily laid.

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received highest award at Buffalo.

Generally adopted for use on iron construction work as a preventive from rust, etc. Equally valuable on wood, stone or brick. A great penetrative. "Bites" right into the pores. Proof against water, acids, alkalis, gases, etc. Never melts, blisters or peels.

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DESIGNERS, BUILDERS and OPERATORS of

AUTOMATIC LABOR SAVING MACHINERY and SPECIAL TOOLS,

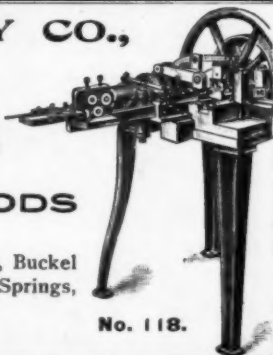
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In Any Possible Shape.

MACHINES for Hooks and Eyes, Loops, Rings, Buckle Wires, Special Staples, Paper Clips, Fasteners, Springs, Pins. Also Automatic Planking Presses.

SEND SAMPLE FOR ESTIMATES.



No. 118.

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Builders of up-to-date

### Punch and Shearing Machines

Well built. Honestly rated. They are money makers. Catalogue free.

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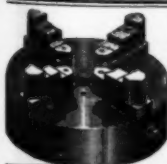
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PRESSES, DIES AND TOOLS.

SPECIAL MACHINERY.



SKINNER Lathe, Drill & Planer CHUCKS.

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## THE Charleston Lead Works

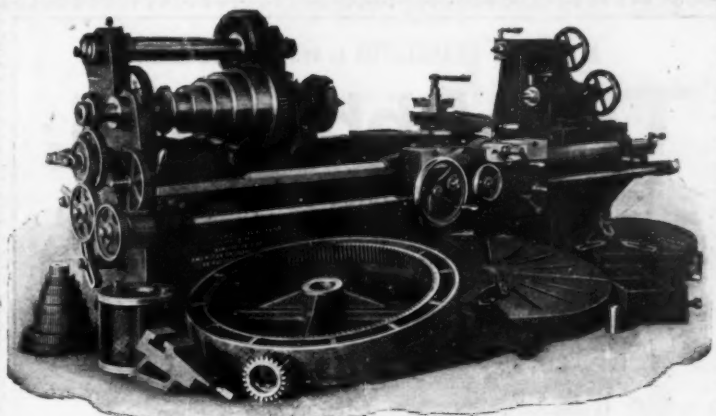
Manufacturers of ALL SIZES AND WEIGHTS OF

### LEAD PIPE AND SHEET LEAD.

Also Proprietors of the Charleston Excelsior Mattress and Broom Works.

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## Floor Space Cuts Quite a Figure

in most any manufacturing establishment, and especially in those that cannot be enlarged to meet new and greater requirements. That's another manufacturing problem that my New Heavy Pattern Double Spindle Lathe will help you to solve, because it gives you two complete, high-grade lathes on one base and doesn't take an inch more floor space than a common big lathe. My old, lighter pattern is a general jobbing shop favorite, from Maine to California, and the new heavy pattern is fast gaining the same position in manufactories of all sorts where there isn't enough heavy work to keep a battery of big lathes profitably employed, but where a portion of the product calls for a big swing and good work. A powerful 26-48 inch swing manufacturing lathe, with double the screw cutting capacity of any ordinary lathe, 3 1/4 inch hollow spindle and every other modern feature, at less than the cost of one big lathe, ought to be worth investigating, seems to me.

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COMPLETE LINE

Bench, Sensitive, Multiple, Series, Stationary and Sliding Head,

BACK GEAR and WITHOUT BACK GEAR.

This cut represents our New 26 in. Sliding Head Back-Gear Drill, with combined Lever, Wheel and Power Feed; automatic stop and quick return lever. The most rapid and most convenient working drill on the market today.

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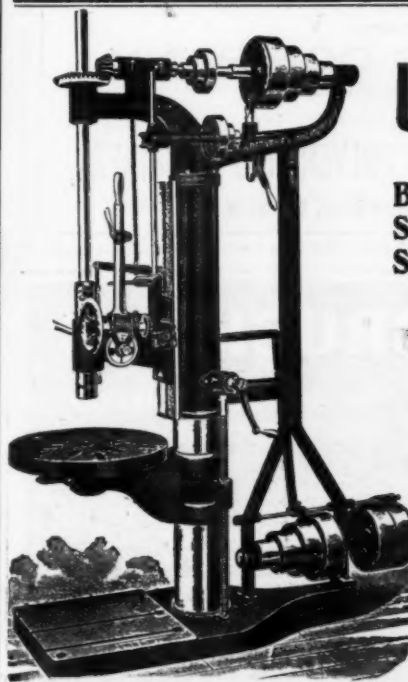
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6 Foot Geared Hand and Power Range Brakes.



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Superior to steel castings. Our steel is made expressly and solely for us. Dies forged under our system will cut 10 to 25 per cent. more blanks than others before regrinding.

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A PERFECT GRANULATOR as well as PULVERIZER.

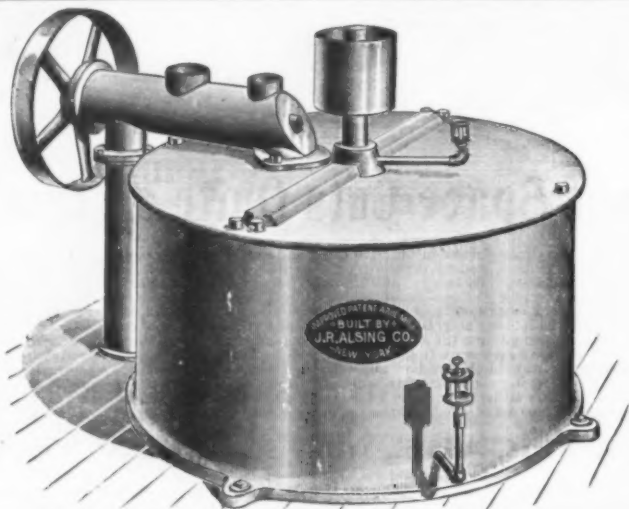
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The Latest Improved Disintegrator.

Simple in Construction.

Safe in Running.

Effective in Operation.



Will reduce the material uniformly to any size from  $\frac{1}{4}$  inch to an impalpable powder, and is therefore a Perfect Granulator as well as Pulverizer

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Established in 1869.

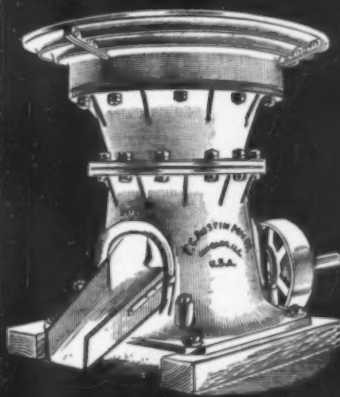
PATENTERS AND MANUFACTURERS OF

**CRUSHING, GRINDING and PULVERIZING MACHINERY,**

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TECHNICALLY and MECHANICALLY WITHOUT A FAULT

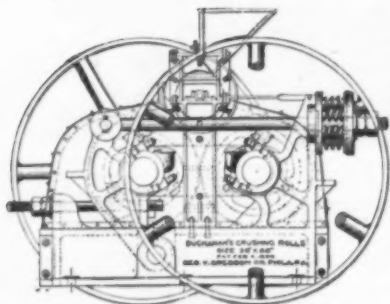


LEAST LIABLE TO GET OUT OF REPAIR, AND MOST ECONOMICAL IN CONSUMPTION OF POWER

WRITE TO DEPARTMENT G. for special catalogue of Crushers, Dump Cars and Contractors' Machinery.

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Drawing of 36"x22" Rolls, weight complete 37,000 lbs. Hammered Steel Shaft, 9" in bearings, 11 in. center. Interchangeable phosphor bronze bearings, 9"x22 $\frac{1}{2}$ ". Crushing shells, 4 $\frac{1}{2}$ " thick, of open hearth or manganese steel. Automatic continuous feed and dust covers for dry crushing.

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Our Rolls are strictly HIGH GRADE. All sizes from 18" up to 60". Send for Catalogues on Buchanan's Ore Breakers and Magnetic Separators.

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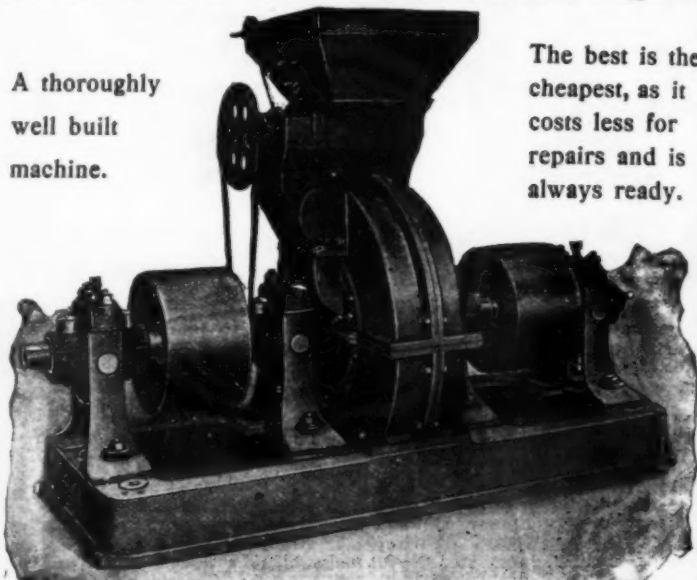
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Over  
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THE ORIGINAL AND STANDARD FOR GRINDING

Cotton Seed, Cotton Seed Hull, Oil Cake, Corn, Corn and Cob together, Corn and Oats together, Feed of all kinds, Resin, Spices, Alum, Borax, Coconut Shell, Drugs, Sugar, Starch Material (Carbon), etc., etc.

Capacity 3000 to 5000 pounds of feed meal (through No. 16 wire cloth) per hour.



A thoroughly  
well built  
machine.

The best is the  
cheapest, as it  
costs less for  
repairs and is  
always ready.

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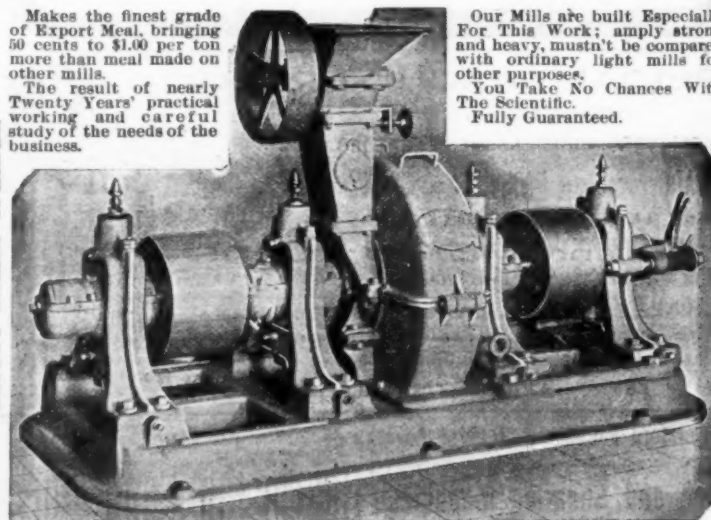
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## The SCIENTIFIC Attrition Mill For Oil Cake.

Makes the finest grade of Export Meal, bringing 50 cents to \$1.00 per ton more than meal made on other mills. The result of nearly Twenty Years' practical working and careful study of the needs of the business.

Our Mills are built Especially For This Work; amply strong and heavy, mustn't be compared with ordinary light mills for other purposes. You Take No Chances With The Scientific. Fully Guaranteed.



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## The Smidth Ballmill The Davidsen Tubemill

excel all others for grinding cement-rock, clinker, ore, etc.

We design and completely equip Portland Cement Manufacturing Plants.

TWENTY YEARS' EXPERIENCE devoted exclusively to the Engineering of Portland Cement Plants, Lime and Brick Works.



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MINING, LOGGING, PLANTATION, CONTRACTORS,  
SUGAR CANE and SMALL CARS OF ALL KINDS.  
Wheels, Axles, Irons, &c.

Send for Catalogue. **PEACOCK IRON WORKS, Selma, Ala.**

**Sullivan Machinery Company,**

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Rock Drills,  
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The most extensive line  
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**ROCK DRILLS**  
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**DRILL MOUNTINGS.**

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**ROCK DRILLS AND  
AIR COMPRESSORS**

Which Pay the User.

**RAND DRILL CO.**

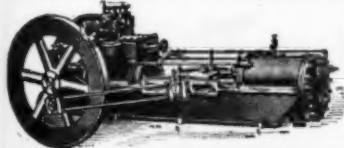
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Simplest and Most Economical

**ROCK DRILLS,**

**AIR COMPRESSORS,**  
of the Most Improved  
TYPES.

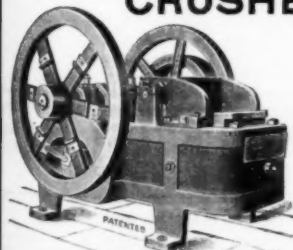
SOLE AGENTS FOR THE  
Kennedy Patent Air Lift.  
McKIERNAN DRILL CO.  
120 Liberty St., New York.



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Large Rock

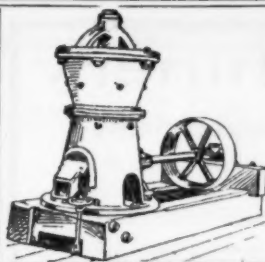
to **4** inch.



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ROLL JAW CRUSHER.



**Fertilizer Mill** Also  
Crushing and Grinding **Machinery.**

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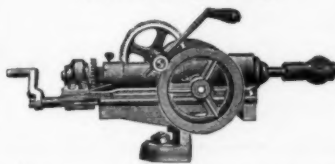
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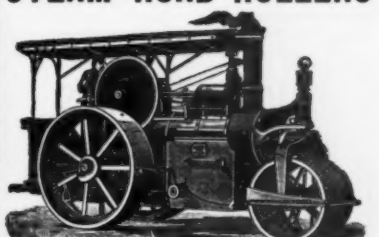


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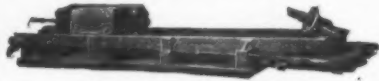
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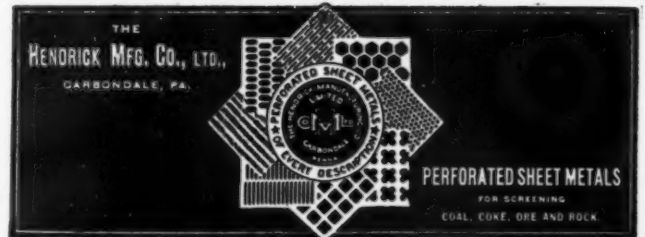
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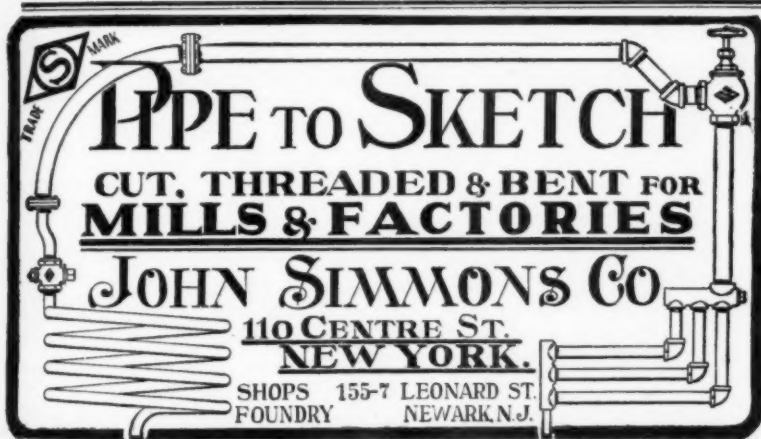
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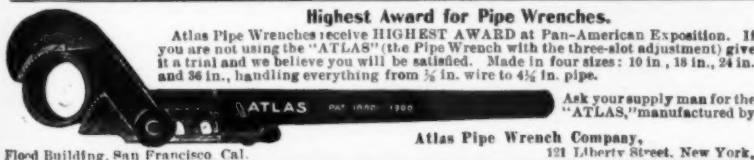
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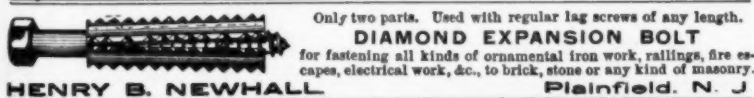
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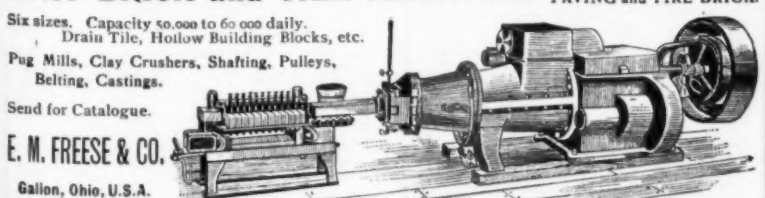
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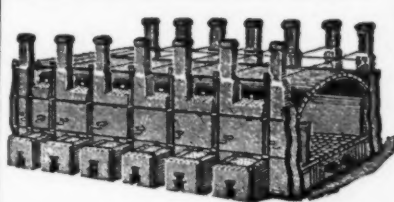
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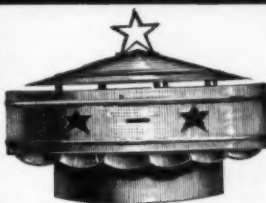
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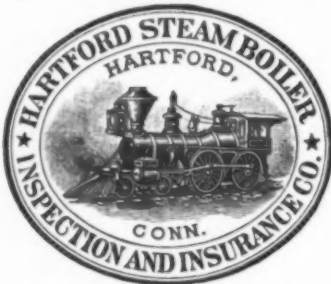
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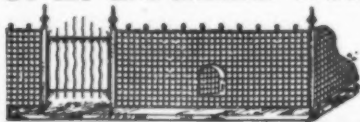
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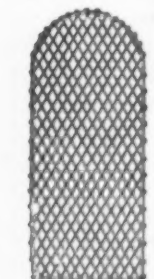
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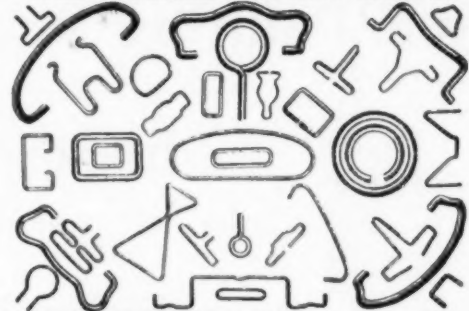
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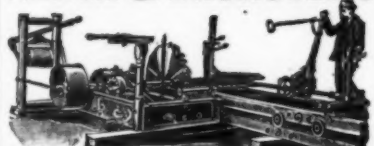
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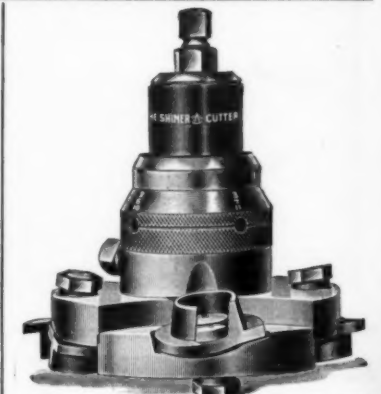
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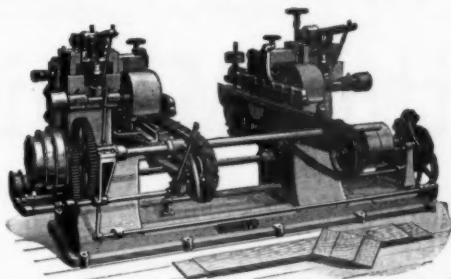
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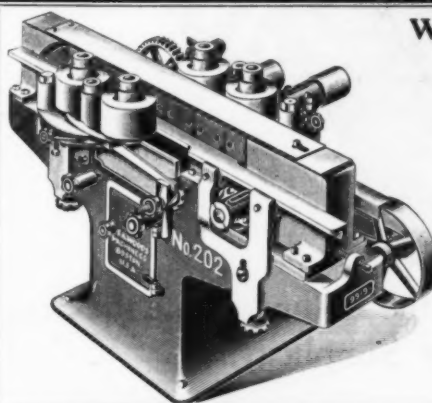
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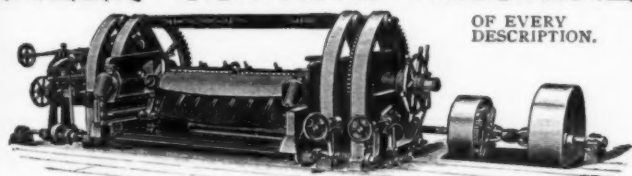
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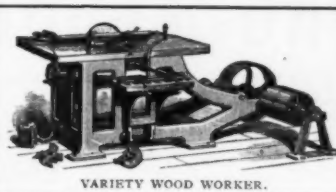
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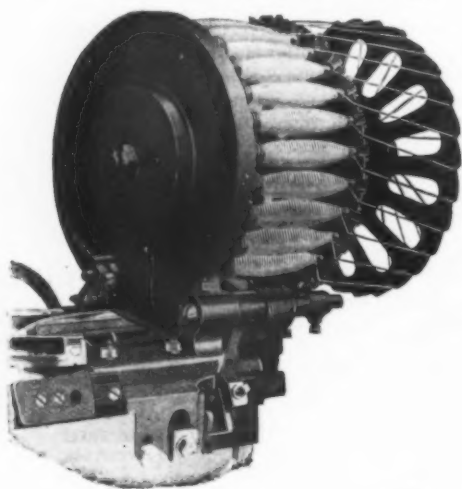
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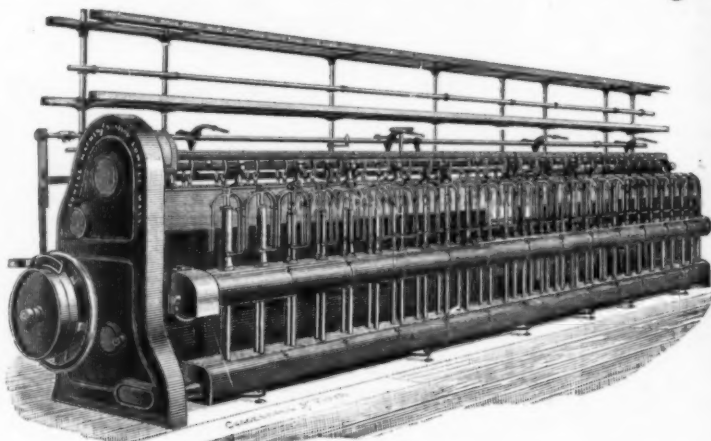
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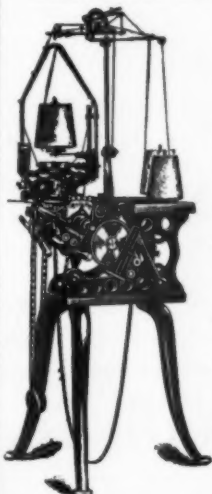
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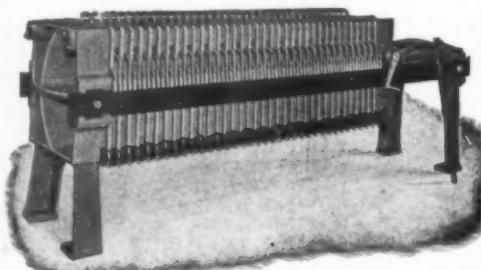
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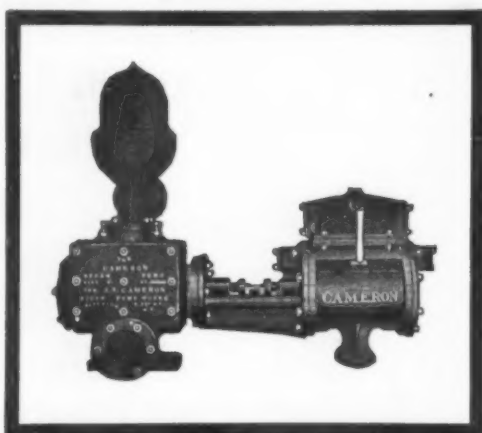
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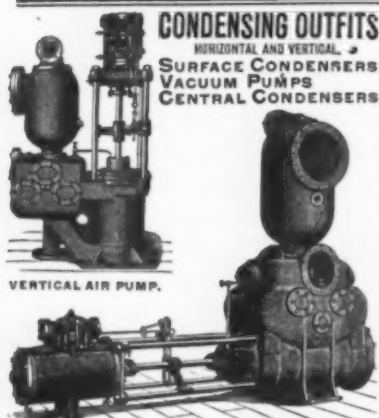
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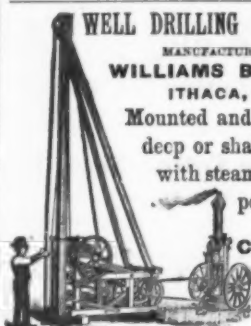
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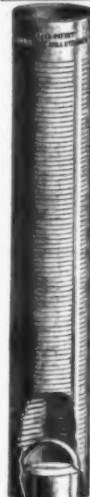
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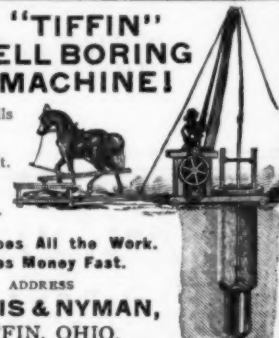
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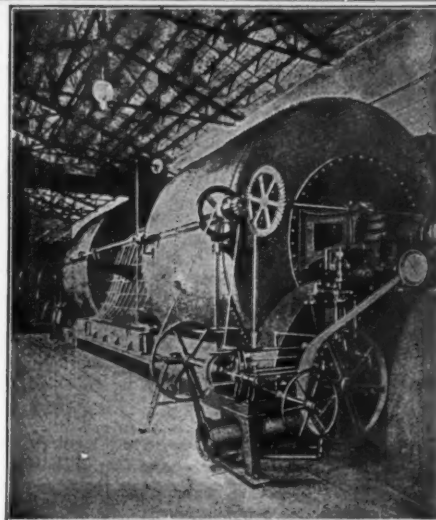
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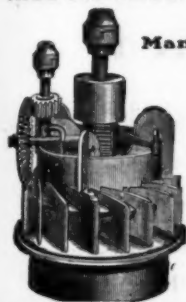
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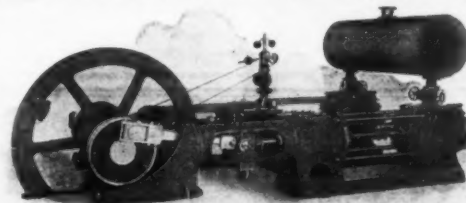
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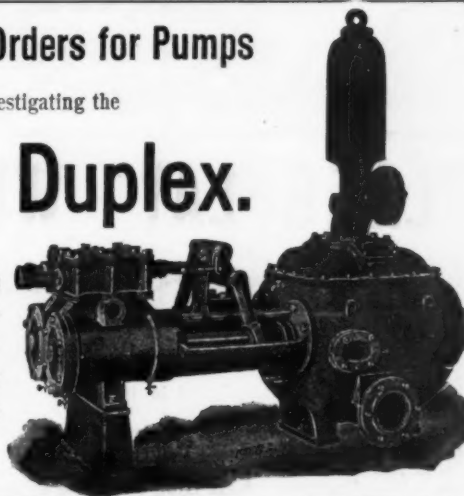
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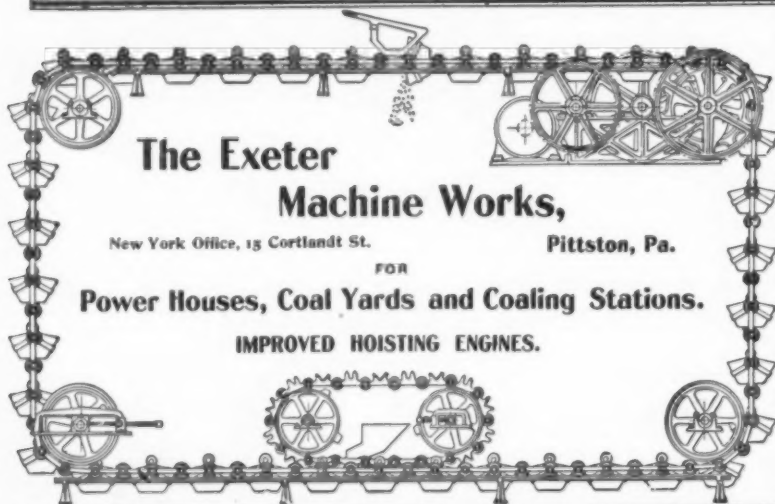
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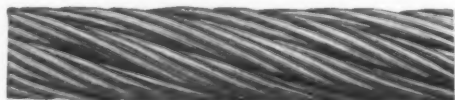
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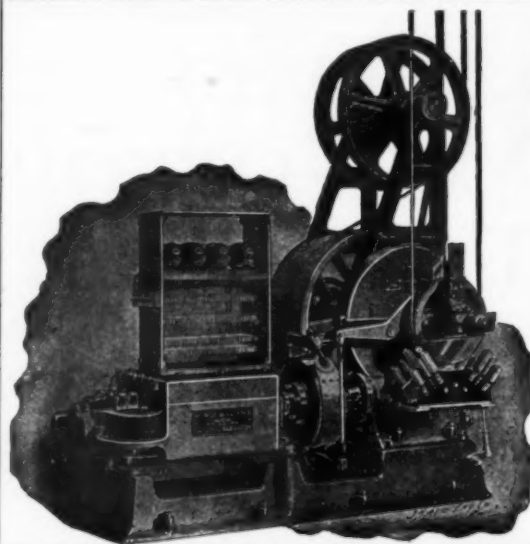
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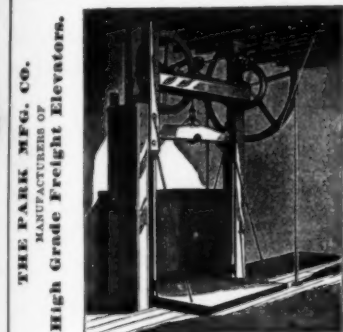
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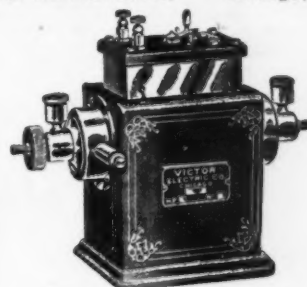
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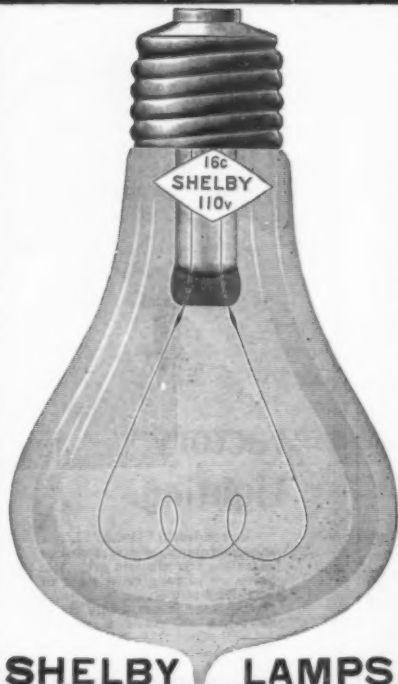
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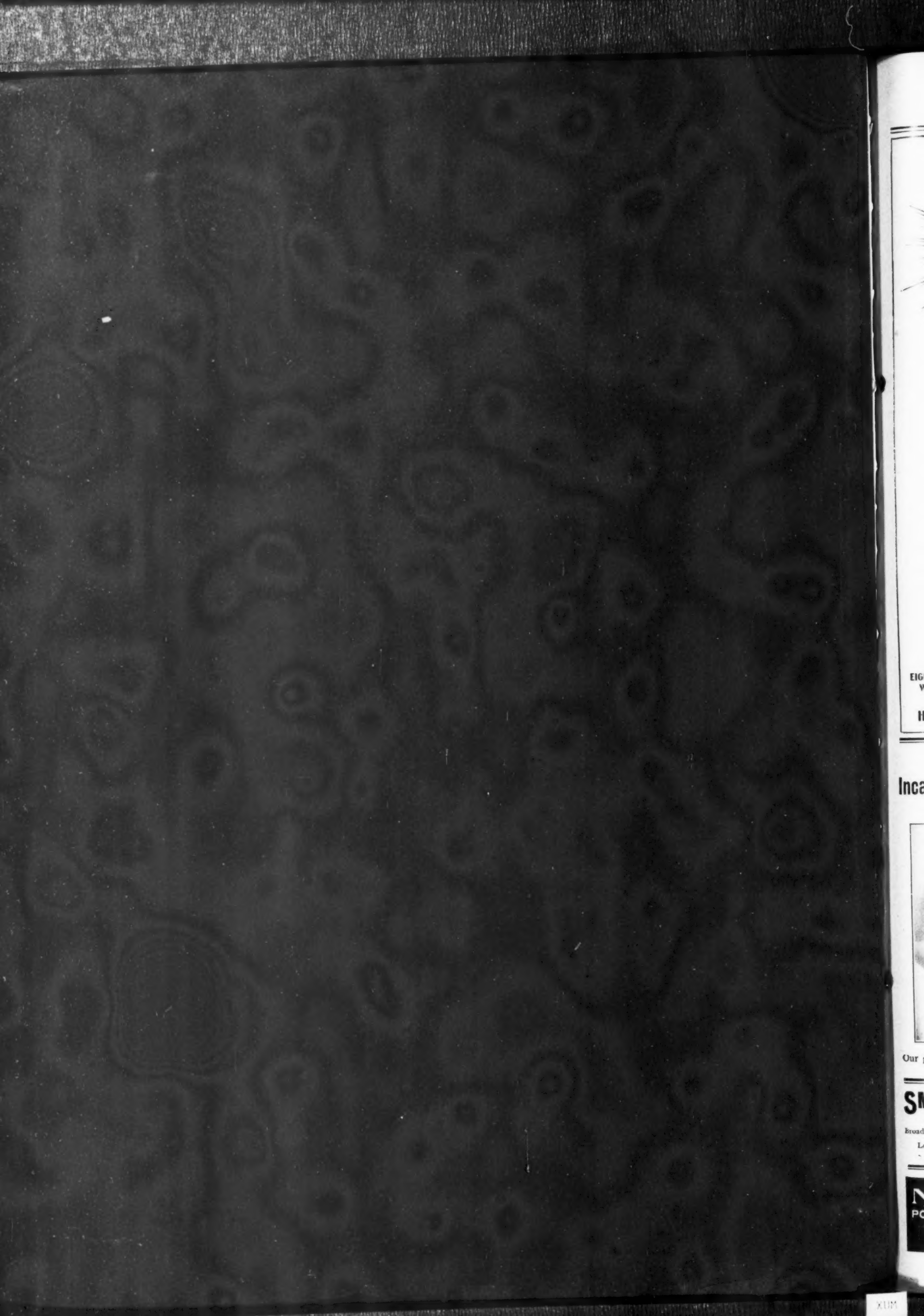
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Why burn 10 gal-  
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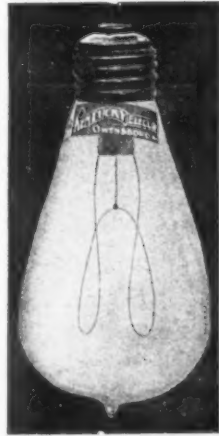
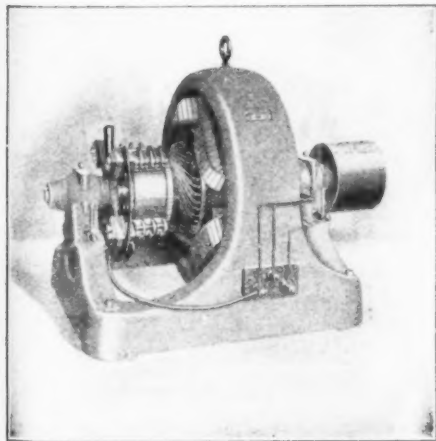
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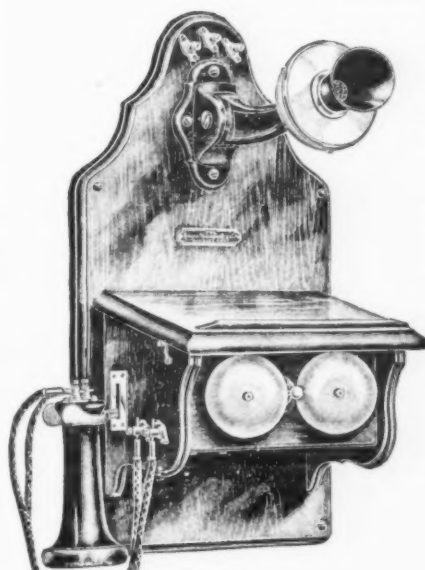


Fig. 220.

Fig. 44.

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Fig. 11.

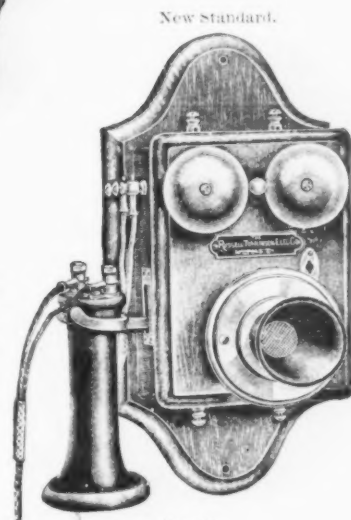


Fig. 44.

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